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TOXIC GOITRE*

BY

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LECTURE I

The term "toxic goitre" is applied to a disease complex dependent on a deranged activity of the thyroid gland with consequent production of one of the following states: (1) an excess of normal secretion; (2) a perverted secretion; (3) a combination of an excessive and a perverted secretion. As to which of these alternatives is the correct interpretation will be discussed later. The above definition, admittedly open to criticism, begs no question, and merely implies that an abnormal thyroid gland is an essential condition, but does not rule out the possibility that the *causa causans* of the disease is of extrathyroid origin.

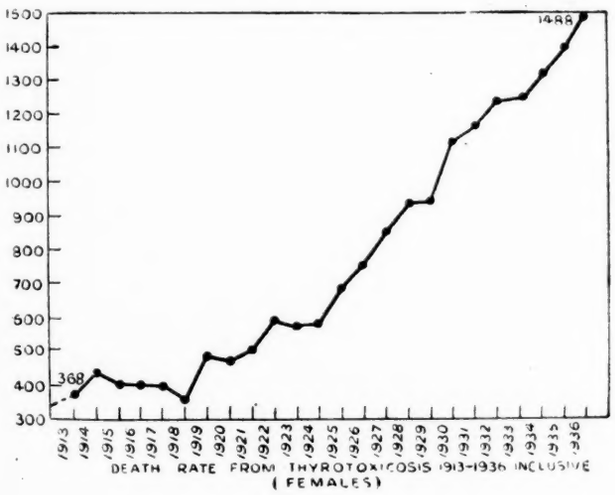

FIG. 1.

The very fact of the existence of the terms "primary" and "secondary" thyrotoxicosis, not to mention numerous synonyms, would imply that two different types of toxic goitre exist. It is well known that Plummer and Boothby and Plummer and Wilder have consistently maintained that there is an essential distinction between the diffuse toxic goitre, which they believe to combine hyperthyroid and dysthyroid qualities, and the nodular toxic goitre, which they conceive to have a purely hyperthyroid quality. The majority of clinicians, pathologists, and biochemists, however, find no solid grounds for the distinction. It seems logical, therefore, to assume that the *causa causans* is the same in all types of toxic goitre and that differences in the state of the thyroid gland itself, the age, sex, and physical and psychical make-up of the individual affected, particularly as to the pre-existence of cardiovascular or general constitutional disease, are together sufficient to explain the observed differences in the syndromes of toxic goitre.

Incidence.—It is at present impossible to give any figures of the actual incidence of toxic goitre in any country. In very few are even the mortality rates available. The Registrar-General publishes annual death rates under the heading of "exophthalmic goitre," though probably it includes the other thyrotoxic syndromes. From the graphs (Figs. 1 and 2) it is clear that there has been a notable rise in mortality in both sexes, especially during the last twenty years, and this in spite of the improvement in therapeutic measures. These facts argue against psychic shock or infections being important factors in the aetiology of toxic goitre, since the steepest parts of the curves of mortality do not coincide with the great war or notably with that of the influenza pandemics. The *sex incidence* has remained in this country at approximately eight females to one male throughout the period covered by the Registrar-General's report, but the sex ratio in Boston is four females to one male, and in Michigan, where "simple" goitre is endemic, the ratio is four to three.

FIG. 2.

* A synopsis of three lectures delivered at the British Postgraduate Medical School on May 5, 12, and 19, 1939.

Aetiology and Pathogenesis

It is as well to admit that we do not know the cause of toxic goitre. Warthin falls back on the rather threadbare idea of a "Graves's constitution," and Eason describes the physical make-up of those who have this constitution, but a careful review of my own material reveals such a wide diversity of physical and psychical types among thyrotoxics that it appears to me impossible to justify such generalizations. The older school of physicians regarded thyrotoxicosis as a disease of the central nervous system, and some of the moderns attribute it to the vegetative nervous system activated possibly by the adrenals. Labbé goes so far as to regard exophthalmic goitre as a combination of hyperthyroidism with a neuro-vegetative syndrome. Whatever the importance of the vegetative nervous system in toxic goitre, there is no evidence worth the name that it originates the disease.

Friedgood and Fortune lay great stress on the almost constant presence of lymph nodes in the thyroid gland in toxic goitre, but in my own material they are far less constant than these observers state. The other ductless glands have nearly all been given prominence in relation to pathogenesis. Partial suppression of the cortex of the adrenals was said by Marine, in 1930, to cause thyrotoxicosis; but Crile, on the other hand, attributes the disease to adrenal overactivity. Marine more recently has laid stress on the aetiologic influence of the thyrotrophic hormone of the anterior pituitary, and Drouet, Jeandelize, and Gault ascribe many of the symptoms of toxic goitre to this cause. It is significant, however, that it is impossible to produce *progressive* thyrotoxic symptoms in experimental animals by any preparation of the anterior pituitary hormones. Hertz and Oastler could find no trace of excessive thyrotrophic hormone in the blood of thyrotoxic patients, nor is there any other evidence of excessive activity of the anterior pituitary in these cases. To sum up, it is fair to say that we have no real knowledge of the aetiological significance of the other ductless glands in toxic goitre.

Infectious diseases such as influenza often precede thyrotoxicosis, and a direct aetiological significance has been attached to this fact on the basis of the work of Farrant. There was, however, only a trivial rise in the incidence of toxic goitre during and after the great influenza pandemic of 1917–19. A history of psychic trauma, emotional strain, severe anxiety, shock, etc., is said by Conrad to be obtainable in 94 per cent. of cases, but the graphs in Figs. 1 and 2 show no rise as a result of the enormous increase in psychic trauma during the great war. It seems fair to conclude that the psychic trauma, like the infectious diseases, may activate latent toxic goitre, but that neither can act as a *causa causans*.

We are thrown back on the view of Rehn, of Möbius, and of Murray that the thyroid is itself a source of the disease, though whether merely as a result of an excessive formation of the normal hormone as Rehn and Murray surmise—supported as their views are by Harington's biochemical work—or, on the other hand, a dysthyroidism as Möbius, Plummer, and Boothby postulate (for primary thyrotoxicosis) is still unproven. The outstanding fact is that without an abnormal thyroid gland thyrotoxicosis does not occur.

Chemistry of the Thyroid Gland in Thyrotoxicosis

In the diffuse goitre of primary thyrotoxicosis the percentage iodine content may be reduced to a mere fraction of the normal, though the total iodine content may be actually raised in certain cases, while in some the iodine content is within normal limits. After iodine therapy the percentage iodine content may rise to well above normal. Waller, in 1914, first ascribed the good effect of iodine therapy to its capacity to induce colloid stasis in the vesicles, and later Marine and Mosser both conceived a similar quasi-mechanical explanation.

Pathological Changes in Other Organs in Thyrotoxicosis

Drouet has described changes in the pituitary in thyrotoxicosis, but Means could find no post-mortem evidence of any such changes. Crile maintains that the adrenals are increased in size and in vascularity, while Marine speaks of their showing a defective cortical structure. Beaver and Pemberton found evidence of fatty changes, subacute necrosis, and simple atrophy in the liver in certain cases. Defective hepatic function may be of significance in relation to morbidity and mortality after operation for thyrotoxicosis.

LECTURE II

The Clinical Features of Toxic Goitre

The Merseburg triad—namely, goitre, exophthalmia, and tachycardia—though usually present at some stage in a majority of the cases of primary thyrotoxicosis, by no means always appear simultaneously. The presence or absence respectively of any one of the common clinical features must not be accepted as proving the existence or absence of thyrotoxicosis. Thus exophthalmia is absent in primary toxic goitre in about one-third of the cases, and may certainly be found irrespective of thyrotoxicosis.

The Goitre

In primary thyrotoxicosis the gland is slightly or moderately enlarged, rarely exceeding five to seven ounces in weight. It is usually smooth, such irregularities as exist being due merely to intensification of the normal surface irregularities. The pyramidal lobe shares in the enlargement, and is sometimes bulky enough to be of importance in relation to post-operative recurrence. The consistence of the gland is significant. It suggests solidity rather as does the pancreas or the parotid gland. Occasionally in early stages it has a soft doughy character; while, on the other hand, in old-standing cases it is tough or even hard. The main arteries of the neck are thrust backwards by the goitre, but even in the hardest gland there is no obscuration of the carotid pulse. The presence of bruits and thrills over the thyroid is significant but not pathognomonic.

In secondary thyrotoxicosis the gland differs in no way clinically from the simple nodular enlargements of endemic or sporadic goitre. In elderly patients particularly, the enlargement may be very slight and the nodules difficult to detect.

The Ocular Signs

These are numerous, but their significance can easily be exaggerated. The "staring" eye is seen more often and at an earlier stage than is exophthalmia, and it also occurs, though infrequently, in secondary toxic goitre. The retraction of the upper lid, exposing the sclera above the cornea, described by Dalrymple, has some diagnostic importance, though Mulvaney believes that a narrow band of sclera above the lower lid is visible at an even earlier stage. Extreme proptosis may occur in mild thyrotoxicosis, and also in a progressive or "malignant" form in post-operative states associated with evidence of

myxoedema. Naffsiger and Brain, who attribute the proptosis to the thyrotrophic hormone, believe that it may occur independently of thyrotoxicosis. It is difficult on this hypothesis to account for its rapid regression in certain cases after thyroidectomy. The mechanics of the condition are still obscure, but Naffsiger and Jones have shown that in certain cases there is a great increase in the bulk of the extrinsic muscles of the eye, produced by diffuse fibrosis and oedema of the muscle fibres with extensive focal lymphoid infiltration as well as venous congestion and oedema of the whole orbit. Mulvaney describes two types of exophthalmia—one characteristic of thyrotoxicosis, and the result of the overaction of Müller's orbital muscle with stretching of the extrinsic muscles; and the other of pituitary origin associated with changes similar to those described by Naffsiger. Brunton says, however, that Müller's muscle, while capable of producing proptosis in animals, is incapable of doing so in human beings. There are many other ocular signs, most of them secondary to the exophthalmia, and they have therefore little importance individually.

Tachycardia

Tachycardia is not a constant phenomenon. It may be purely paroxysmal for months before it becomes persistent, so that at any given examination a normal pulse rate is not unusual. The extremely high persistent rates are usually of bad omen. Palpitation may be an early symptom, yet it may be denied entirely by patients whose forcible apex beats can be observed at a distance. There is an inveterate tendency for fibrillation to develop sooner or later in all toxic goitres. In men it is more frequent and appears earlier in the course of the disease than in females. In secondary toxic goitre fibrillation is often the first indication of abnormality, though it is obvious from the pathological character of the goitre that the latter is of long standing. It is quite certain that a large proportion of cases of auricular fibrillation is of thyrotoxic origin (Percy puts the figure as high as 90 per cent.). Parkinson and Hoyle have shown the importance of obscure thyrotoxicosis in the development of insidious hyperpiesis, especially in women past middle age. It is a matter of opinion as to whether there is a true myocarditis in toxic goitre, the consensus of opinion being that there is no change in the heart muscle. It is probable that the cardiac lesions are of a functional character and based on the abnormal demands on the heart muscle necessary to maintain the blood-flow increase in toxic goitre. Cardiac hypertrophy is not met with in uncomplicated thyrotoxicosis, but characteristic forms of hypotonia and dilatation do occur (Parkinson and Cookson). Cardiac failure, both congestive and anginal, eventuate in a notable percentage. The possibility of antecedent cardiac and vascular disease is important in this connexion. The greater frequency of cardiac complications in the male may be due to such factors.

Nervous and Muscular Phenomena

(*a*) Excessive fatigue is complained of by many patients at the onset. It is related to the increased cost of muscular work generally in thyrotoxicosis.

(*b*) Tremor is extremely common. It is usually fine, and its frequency about 8 to 9 per second. Each finger may have its distinctive rhythm. The tongue may show tremor when the fingers do not. Muscular incoordination is well seen when the patient is asked to step up unaided on to a stool. Muscular weakness is revealed by noting the length of time during which the patient can maintain the knee extended. The thyrotoxic is seldom able to hold the posture thirty seconds, while the normal person can do so for at least a minute.

(*c*) Nervousness may be extreme, though many patients deny it even when it is obvious. Perfectly placid individuals do, however, occur among thyrotoxics.

(*d*) Emotionalism may accompany the preceding, and is exhibited by fits of crying—which the patient is often quick to recognize as abnormal. Some patients, for a time stimulated by the enhanced metabolic status, have a sense of well-being.

(*e*) Definite psychoses are not uncommon. Toxic goitre patients are occasionally admitted to asylums and the connexion of the abnormal mental state with the thyroid gland recognized only later. There is a special tendency to psychoses among patients being prepared for operation and during the post-operative period.

(*f*) Myopathies of several orders have been described by Brain. The profound muscular wasting in certain cases is difficult to correlate with the moderate activity of the other physical signs.

Blood Changes

Blood changes described by Kocher as having diagnostic and prognostic value have not proved helpful in my clinic, though Hertz and Lerman report both an absolute and a relative increase of monocytes in primary toxic goitre. The alcohol-insoluble iodine fraction in the blood is greatly increased, the alcohol-soluble fraction little changed. After iodine therapy the latter is greatly increased and the former unaffected. Some importance diagnostically can be attached to the combination of a high soluble-iodine fraction with a raised B.M.R., though there are cases in the secondary group to which this statement does not apply.

Digestive Disorders

There is often enhanced appetite, sometimes amounting to bulimia; yet most patients waste, sometimes as rapidly as in anorexia nervosa. Rarely the patient for a time actually gains weight, even very considerably. Diarrhoea is common, constipation unusual. The liver shows a defective power to store glycogen, but if this be combated the metabolism of carbohydrates is normal. Jaundice, usually of slight to moderate degree, occurs in the severe grades of the disease, and may be related to the tendency to toxic hepatitis in thyrotoxic states.

Metabolism

Metabolism of foodstuffs is unaffected in toxic goitre, with the proviso above mentioned in relation to carbohydrates. Spontaneous creatinuria occurs and there is diminished creatine tolerance, both of these related to increased metabolism in the skeletal muscles.

If one can exclude such diseases as acromegaly, leukaemia, severe anaemia, erythraemia, certain drugs, and some cases of non-thyrotoxic hypertension, etc., and be sure the estimation is truly basal, a constantly raised B.M.R. suggests thyrotoxicosis. There are numerous points to consider before accepting the evidence of this laboratory test. There is no absolute standard by which the B.M.R. can be judged, and although it is customary to accept such ranges as ± 10 per cent. or even ± 15 per cent. as within normal limits, it is certain that some healthy individuals have rates well above or below these ranges. A rise from subnormal up to $+15$ per cent. in one individual is as significant as a rise from a high

normal to +50 per cent. in another. More valuable than the actual figures is the effect of adequate iodine therapy, which, as shown in the graph (Fig. 3) in favourable cases reduces the rate by approximately 3.5 per cent. daily. If the patient has been under iodine for a prolonged period before the B.M.R. is tested omission of iodine will induce a rise in the rate. This provides an alternative diagnostic method. It is probable that the more rapid the fall in the B.M.R. under iodine the better the

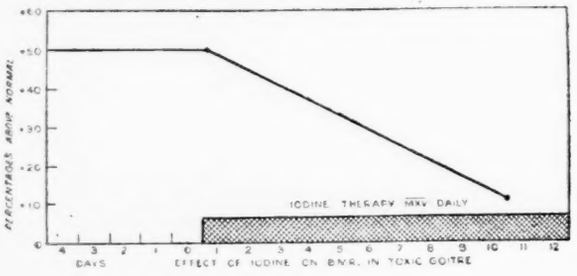

FIG. 3.

prognosis. The above statements need qualification in respect to my own clinic, since only about 75 per cent. of the cases conform to them, approximatey 25 per cent. being unaffected by iodine therapy. Means, however, reports only 3.4 per cent. of his cases as recalcitrant to iodine.

Clinical Types of Toxic Goitre

1. *The Hyperacute.*—These rare cases progress without remission to a fatal termination, sometimes rapidly. They do not respond to iodine, and succumb in a "crisis" or in delirium or coma. Great restlessness, and diarrhoea and vomiting, are features of this type, signs of cardiac failure except at the end being rare.

2. The *progressive* type is common, the disease tending gradually to destroy life after a period of years usually as a result of cardiac complications.

3. The *relapsing* type is confined to the primary form. The rises and falls in the intensity of the toxaemia may occur regularly, but usually there is no definite periodicity; eventually this type merges into the chronic.

4. In the *chronic* type there is persistence of toxic symptoms at a low ebb. It is said that chronic forms tend to merge into myxoedema, but I have never observed this sequence.

5. An *apathetic* type is described by Lahey.

6. *Masked thyrotoxicosis* is an association of certain thyrotoxic phenomena with little or no obvious thyroid enlargement. This type is poorly defined owing to the difficulty of deciding sometimes whether a goitre is or is not present. In toxic goitre the gland is frequently of the "circular" type, embracing the oesophagus and pharynx, most of it then being out of reach of the palpating fingers. Many cases labelled "masked hyperthyroidism" are either recognizable as having a definite goitre (therefore not truly masked) or they belong to the category of neurocirculatory asthenia, etc., and are therefore not toxic goitres.

The *diagnosis* of toxic goitre rests on the presence of one or other of the syndromes indicated above. If doubt exists after weighing up the clinical features repeated estimation of the B.M.R. with and without iodine therapy will usually resolve it. The worst possible treatment for neurocirculatory asthenia is subtotal thyroidectomy. ***When in doubt do not operate*** is the golden rule in unproven toxic goitre.

Prognosis

Prognosis is extremely difficult to discuss divorced from particular methods of treatment. There is no reliable evidence as to the likelihood of spontaneous cure. Many cases regarded as examples of natural cure can be shown to be still chronic thyrotoxics, sometimes with auricular fibrillation, etc. The prognosis in untreated cases is bad, and sooner or later cardiac decompensation of a congestive or anginal form eventuates.

Treatment

Toxic goitre cannot be adequately treated by the individualistic clinician; only by pooling all resources is it possible to combine a high percentage of cures with low mortality and recurrence rates. Toxic goitre therefore needs to be treated in special clinics. The consideration of treatment under various headings is purely for convenience and does not imply that these should be regarded as alternative but rather as auxiliary methods. It follows, therefore, that under the first two are included the therapeutic methods antecedent to surgical treatment, which can be safely applied only when every precaution has been adopted to ameliorate cardiac, pancreatic, and hepatic insufficiency.

MEDICAL

(*a*) *Rest* is the time-honoured method of reducing the activity of the symptoms by relieving all unnecessary strain on the various organs. Under rest the B.M.R. may fall as much as 2.5 per cent. daily for a time.

(*b*) *Iodine Therapy.*—It is doubtful if it is ever necessary to exceed a dose of 20 minims of Lugol's solution thrice daily. An equivalent amount of iodine given as the tincture or as potassium or sodium iodide acts as well. I have used di-iodo-tyrosine as suggested by Harington in over 600 cases, but found it not more effective, though far more expensive, than simpler preparations. The work of Means suggests that we are inclined to overdose our toxic goitres with iodine in this country. The optimum effect is usually but not invariably obtained in 10–14 days, after which there is a gradual relapse with a rise in the B.M.R. If the iodine be stopped for some weeks a similar but less striking improvement may follow its resumption and so on. Eventually the repetition of iodine therapy fails to produce any effect (Fig. 4). Means

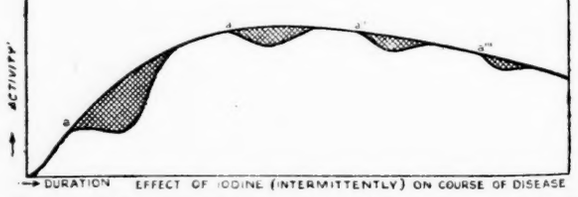

FIG. 4.—The upper continuous line indicates course of disease without iodine therapy. The undulating line indicates effect of iodine therapy. a, a^1, a^{11}, a^{111} = points at which iodine therapy starts.

dissents from this view and claims that iodine maintains a certain control of the disease so long as it is continued, though he admits that it does not cure thyrotoxicosis. The danger of prolonged iodine therapy has been stressed by Kocher, but I have seen no case of iod-Basedow in my series.

(*c*) *Diet.*—There is no justification for modifying the diet appreciably. There is some reason to believe that

vitamin B has a special value, especially in relation to its action in cardiac muscle metabolism.

(*d*) *Sedatives.*—Means objects to chloral hydrate because of the rather vulnerable liver, but I have found it more effective than are the barbiturates, luminal, etc.

(*e*) *Serotherapy and Hormone Therapy.*—The various "sera" are without beneficial action whatsoever in thyrotoxicosis. Anti-thyrotrophic hormone is already unfortunately being exploited therapeutically.

(*f*) *Digitalis* is useless for tachycardia, though indicated in cardiac failure complicating thyrotoxicosis. Post-operatively, digitalis or strophanthin is valuable in auricular fibrillation. Quinidine will restore cardiac rhythm in nearly all cases of arrhythmia, but its real value is post-operatively, when it will usually regularize and maintain cardiac rhythm.

(*g*) *Blood transfusion* is seldom indicated in toxic goitre. Intravenous therapy by the continuous-drip method with 5 per cent. glucose in *distilled* water is of great value in emaciated cases, especially those with marked diarrhoea and vomiting.

RADIOLOGICAL

X-ray therapy and curietherapy are said to be able to reduce thyroid activity to any degree, even up to myxoedema. Its disadvantages are its unreliability, the high mortality, and the long interval before success is achieved or failure admitted. More than two hundred goitres removed by me after *x*-ray therapy, examined pathologically, revealed no changes ascribable to the treatment. In a small series, in which we applied curietherapy to one lobe only, no difference could be detected histologically between the irradiated and non-irradiated lobes. *X*-ray therapy and curietherapy should be reserved, therefore, for cases in which surgical treatment has been refused.

LECTURE III

Surgical Treatment

The advantages established for surgical treatment are the high proportion of cases which can be restored quickly to economic efficiency, the low mortality, and the rarity of relapses and recurrences. The disadvantages are sequels such as myxoedema, tetany, and damage to the vocal apparatus, all except the first being rare with non-surgical treatment.

Phase at which Operation should be Undertaken.—Since all except fulminating cases and those of minor degree come within the scope of surgery, the prime necessity is to decide when the risks are at a minimum. The problem is hardly capable of reduction to any definite formula. Speaking generally, operation is advisable when iodine therapy, etc., have produced their optimum effect. Restlessness and persistent excitability, especially if combined with diarrhoea and vomiting, are the main danger signals.

Choice of Operation.—The objective is to reduce the activity of the gland to a normal level and to prevent subsequent reactivation. This necessitates the removal of about seven-eighths of the gland—the actual proportion depending on the features presented by individual cases. Equally important is the simultaneous control of the arterial blood supply, so that the possibility of recurrence of glandular activity is reduced to vanishing-point: failure to achieve this accounts for numerous relapses.

(i) *Preliminary Arterial Ligature.*—The ligation of both superior arteries in the type of case in which it is most clearly indicated involves much risk and little real advantage. The variation in the size and position of the inferior arteries makes formal ligature a difficult and sometimes an almost impossible feat.

(ii) *The "Staged" Operation.*—Surgeons for whose views I have a high respect believe that the mortality in "bad risk" cases can be reduced by operating in two or more stages. It is, in my opinion, rather a matter of surgical technique than of fundamental principle, and all the advantages claimed for the "staged" operation can be achieved by one suitably planned operation.

(iii) *Subtotal symmetrical thyroidectomy* is the procedure of choice. If all the arteries are ligated it is sufficient to preserve in diffuse goitres about one-sixth to one-eighth. If the main inferior arteries are not tied a larger fraction of thyroid tissue should be extirpated and a higher percentage of recurrences faced.

Pre-operative Preparation.—This vital phase has already been dealt with. The following additional matters need expansion:

(i) *Is it Desirable to Eliminate "Focal Sepsis" before Operation on the Thyroid Gland?*—In general it is unwise to perform such operations as tonsillectomy as a preliminary to thyroidectomy.

(ii) *Susceptibility to Adrenaline.*—Much misconception exists as to the alleged ill effect of adrenaline in thyrotoxicosis. A sustained rise of pulse rate and pulse pressure is the basis of Goetsch's test. In only a very minor percentage of cases is this reaction obtained. It is sufficient, therefore, to apply the test a few days before the proposed operation, and if the full reaction follows, adrenaline should not be used with the local anaesthetic.

(iii) The *oxygen tent* represents the main advance in the treatment both of thyroid crises and of the cardiac and pulmonary complications of thyrotoxicosis. It is necessary, however, to accustom the "bad risk" cases to the tent before operation.

Anaesthesia.—The indications are for an anaesthetic which is non-toxic, avoids anoxaemia at all stages, and induces tranquillity. Morphine and its derivatives (for example, omnopon) are valuable in moderate doses. Hyoscine may cause uncontrollable excitement in certain patients. Avertin is used extensively in certain clinics, and I find it valuable for the highly excitable patient, but it sometimes induces anoxaemia, which cannot be fully controlled by regulating the percentage of oxygen in gas-oxygen anaesthesia. The peculiar anaesthetic problems of the thyrotoxic patient are best met by a combination of basal, local, and general anaesthesia. The most generally useful series is: morphine or avertin as a basal anaesthetic, local infiltration with 0.5 per cent. novocain and adrenaline, and gas-and-oxygen intratracheally.

Results of Surgical Treatment

The primary mortality should not exceed 1 per cent. in a well-organized clinic; the recurrence rate should be no greater and the incidence of laryngeal paralysis should be considerably less than that figure. The patient should be able to resume his work within three months. In the case of women there is no reason why they should not marry and bear children, though pregnancy is usually better postponed for two years after operative treatment. Patients with auricular fibrillation regain normal rhythm in at least 80 per cent. of cases with or without the aid of digitalis or in certain cases of quinidine. In cardiac failure compensation is restored in most cases, but full compensation is not so likely to follow when rheumatic or syphilitic cardiac lesions complicate the problem.

POST-PARTUM HAEMORRHAGE

WITH SPECIAL REFERENCE TO PARTIAL DETACHMENT OF THE PLACENTA*

BY

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No discussion on post-partum haemorrhage can be attempted without careful consideration of the mechanism and physiology of the third stage of labour. I will therefore confine myself chiefly to haemorrhage which occurs during this stage—that is, before delivery of the placenta.

The placenta is formed by the union of the chorion frondosum and the decidua basalis, and is therefore composed of both maternal and foetal elements. Recent research by Spanner, and by my colleague Dr. Ninian Falkiner (1939), shows that the maternal arterial blood enters the placenta at the base of each cotyledon, and that this blood is drained away by the circular sinus, and thence to the uterine veins—that is, that the entire venous (maternal) drainage of the placenta is situated only in the marginal zone. This probably accounts for the firmer attachment of the periphery of the placenta.

The placenta is most commonly situated on the anterior or posterior uterine wall, rarely on the lateral wall or fundus. When it separates, the line of cleavage is through the spongy layer of the decidua. When the child is expelled the size of the uterus diminishes rapidly, its walls getting thicker and shorter in all directions. The placenta also conforms to a certain extent to this movement, and becomes shorter and thicker, but as it does not possess the elastic properties of the uterus its power to contract is limited. After a period of quiescence the contractions recur, and the placenta buckles and is forced off the uterine wall. As the periphery is more firmly attached than the central portion the latter first becomes detached. Blood from the divided maternal vessels is poured out behind the detached portion and forms the retroplacental haematoma. Subsequent contractions effect the complete separation of the placenta, the central foetal surface of which is forced downwards, and eventually into the relaxed uterine segment and the vaginal vault, stripping the membranes off the uterus by a process of invagination. I am convinced that this, the method of Schultz, is the normal method of separation, certainly in Dublin. Freeland, in 1914, noted that in 82.5 per cent. of 2,700 labours in the Rotunda Hospital the Schultz mechanism occurred. My own observations confirm these findings. In cases of Caesarean section I have for some years allowed time for the placenta to separate normally instead of removing it at once manually, except, of course, in cases where the uterine incision had passed through the placental site. I therefore had ocular demonstration that the Schultz method was the mechanism by which an undamaged and undisturbed placenta separated. It is particularly well seen in the lower segment section, as the contractile portion of the uterus is uninjured. I adopted this technique, as I was satisfied that by waiting a reasonable time for normal separation blood loss is avoided. For the success of this mechanism it appears to be essential that the centre of the placenta be detached first and that all the periphery be detached at the same time, probably owing to a uterine contraction forcing the retroplacental haematoma outwards in all directions.

* Read in opening a discussion in the Section of Obstetrics and Gynaecology at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

Management of the Third Stage of Labour

In Dublin the third stage is treated in the most conservative manner possible. In approximately two-thirds of the normal cases the fundus is not touched after delivery until the signs of placental separation are present; in the remaining third the fundus is controlled manually, but no massage is allowed. In cases following an operative delivery the fundus is usually controlled. In the Rotunda Hospital the placenta is delivered, in normal cases, in the left lateral position; in the other two hospitals the placenta is delivered in the dorsal position. Oxytocic drugs are not administered as a routine until the placenta is delivered. Injection of the umbilical cord with saline is practised when the placenta is retained and expression, without anaesthesia, has failed. It appears to be successful in about 33 per cent. of cases, but in my opinion should not be relied upon in the presence of haemorrhage.

What results are derived from this conservative treatment? I will give you the figures in terms of manual removal of the placenta rather than in those of post-partum haemorrhage, as the latter is a variable term and includes the traumatic variety. For three years the figures are: deliveries, 28,749; manual removals, 147; (0.5 per cent.). Abortions and miscarriages are excluded, but patients delivered in the hospital district are included.

Types of Post-partum Haemorrhage

Post-partum haemorrhage is of three distinct types: (1) placental site haemorrhage, due to premature separation of the placental margin; (2) true atonic haemorrhage, where there is no bleeding till after delivery of the placenta; (3) traumatic haemorrhage, where the bleeding comes from lacerations in some part of the birth canal. Haemorrhage occurring during the puerperium is not being discussed.

Placental Site Haemorrhage

The immediate cause of the haemorrhage here is failure in the normal mechanism of placental separation, resulting in detachment of part of the placental margin before the central area has separated, with consequent escape of the retroplacental haematoma and loss of its important wedge action. Along the line where partial detachment has occurred the maternal vessels are held open and continue to bleed, full retraction of the uterine muscle being prevented by the portion of the placenta still attached. The uterus now finds difficulty in separating the remainder of the placenta, and the continued loss of blood will eventually produce atony.

Causes of Partial Separation

A large number of conditions, such as twins, hydramnios, fibroids, low implantation of the placenta, and short cord, predispose to partial separation of the placenta; but the majority of cases fall into two groups: (1) those following spontaneous delivery—and here the cause is generally ill-advised handling of the uterus and attempts at expressing the placenta before it has entirely separated; (2) those following prolonged operative delivery, where the condition may be due to a combination of the effects of the anaesthetic and mechanical interference with the placenta. In addition there are two conditions which perhaps need special mention. First, morbidly adherent placenta: this is a rare condition with us, and, of course, only causes haemorrhage when parts of the placenta are unusually firmly attached. Secondly, certain women

apparently suffer from spontaneous partial detachment of the placenta immediately after delivery, without any known cause, this occurring in successive pregnancies.

According to Reich (1939) pituitary extract administered during labour predisposes to partial detachment of the placenta or its retention by means of an "hour-glass" contraction. This opinion is also expressed in the Report on the Maternal Morbidity and Mortality in Scotland.

Signs and Symptoms

On the whole it is comparatively rare that the onset of bleeding of this type is sudden and severe. It is most likely to be gradual: just a little bleeding is noticed at the vulva. The fundus is found to be above the level of the umbilicus; the placenta is thought to be separated, and attempts at expression are made. A quantity of clot is expressed, but the placenta is still retained. The bleeding appears to stop and further time is given for separation, and the whole process is repeated, perhaps several times. Now the bleeding becomes more profuse and continuous and the patient's general condition undergoes marked deterioration. The situation becomes alarming and, perhaps for the first time, the person in charge realizes the true nature of the condition. On being called in to deal with this type of case one is invariably told that the patient was quite well until five minutes before sending for help, it having been overlooked that the collapse was due to the cumulative effect of the blood loss. One of the traps of post-partum haemorrhage is that bleeding without injury may not produce any alteration in the patient's appearance or pulse until a large quantity has been lost. Up to a point the loss is compensated for by vasomotor control, but when the limit of compensation has been passed the patient's collapse may be sudden and profound.

In clinics (Stander, 1936) where the blood loss post partum is measured as a routine anything over 500 c.cm. is classified as post-partum haemorrhage; in a severe haemorrhage a patient will lose 1,500 c.cm., and recoveries following a loss of 2,500 c.cm. have been recorded, but they are rare.

Treatment of Bleeding in Third Stage of Labour

Treatment of this haemorrhage is complicated by the retention of the placenta, but before starting any active treatment for its removal the patient's general condition must be carefully considered. It is not uncommon to be called in to a case where the patient is in a state of collapse from haemorrhage but where, at the moment, the bleeding has stopped. In these circumstances every effort should be directed towards restoring the patient by means of saline, intravenous or submammary; transfusion, if such be possible; warmth; morphine; raising the foot of the bed; and, perhaps, bandaging the limbs. No attempt, however, should be made to remove the placenta until the patient's general condition has improved. Manual removal when undertaken on a collapsed patient is a very dangerous operation. That the saline may raise the blood pressure and restart the haemorrhage is a risk which must be faced. If the saline be withheld, the patient may die in the collapsed condition.

Where the patient is bleeding it is imperative that the treatment be directed primarily to check the haemorrhage; therefore the uterus must be emptied. It is essential to have a complete scheme in one's mind and to be able, where necessary, to go from step to step with speed and confidence. The following scheme is used: (1) Pass a catheter; (2) rub up the uterus and express the placenta by the Dublin method; (3) express the placenta by Credé's method; (4) give an anaesthetic and express the placenta by Credé's method; (5) manually remove the placenta; stop the anaesthetic; give oxytocic drugs; (6) bimanual massage; (7) hot intra-uterine douche; (8) pack the uterus.

Credé's Method of Expression

Failure is often due to bad technique. The method is designed to squeeze the partially adherent placenta off the uterine wall, and to achieve this the uterus must be retained in the abdominal cavity, where it can be grasped and compressed by both hands. The uterus should only be forced downwards into the pelvis when the placenta has left it. Traction on the cord as an accompaniment to this manœuvre is to be condemned: it greatly increases the risk of tearing the placenta, and occasionally causes an acute inversion of the uterus. Attempts with Credé's method should not be too prolonged, as it is very liable to produce shock. Should the manipulation fail, the bleeding is usually increased. Where the patient is stout or resistant, an anaesthetic may turn failure into success.

Manual Removal of the Placenta

For this operation an anaesthetic is desirable. Both spinal and gas-and-oxygen are recommended, but outside a well-equipped hospital these are rarely practicable. Light general anaesthesia, chloroform or ether, may be used—just enough to keep the patient relaxed. Excess of anaesthetic will interfere with contraction of the uterus. The anaesthetic should be stopped at the earliest possible moment, generally when the hand has been successfully introduced into the uterus and the placental edge found.

The general technique is a familiar one, but there are some points worthy of mention. For example, gloves. Personally I wear boiled gloves, and do not find in them any disadvantage in separating the placenta. Where there is no time to boil gloves they may be put on dry, washed in soap and water, and sterilized in an antiseptic solution. Theobald, in 1924, showed that this was quite an effective method of sterilization and that it is easier to obtain surgical cleanliness of a smooth rubber glove than of a relatively rough hand. With regard to antiseptic precautions in general, the most rigorous care must be taken, but taken without undue delay. It is rightly held that it is useless to save a patient's life from post-partum haemorrhage only to lose her from sepsis later on. On the other hand, it is of no value to have produced a nice sterile field only to find that the patient is a corpse. There are occasional cases where the bleeding is so rapid that its immediate control must outweigh all other considerations. However, one precaution can always be taken: the gloved hand should be immersed in antiseptic lotion and, straight from that, inserted into the vagina.

Once the placenta is reached there is rarely any difficulty in separating it. Morbid adhesion of the placenta is uncommon, and placenta accreta, where there is no line of cleavage at all between the placenta and the uterine wall, is extremely rare. In domiciliary practice, where sterile towels are not available, the operator must remember that his left hand is now dirty, and this fact should dominate his technique for all other operations in the scheme.

When the placenta is removed the bimanual massage of the uterus should be carried out vigorously. It is a most powerful way of stimulating uterine contraction, and is performed by ante-flexing the uterus, with the left hand, over the right hand, in the vagina. In my experience this

method gives better results than when the right hand is inserted in the uterus. Should the bleeding continue, a hot intra-uterine douche is given. It is best done with a return-flow catheter, which should be passed by sight, exposing the cervix by means of a posterior speculum and ring forceps on the anterior lip. Ring forceps are preferable to bullet, which are apt to tear the cervix. Should the necessary instruments not be available the return-flow catheter may be passed by touch, using the right hand as a posterior speculum and guiding the catheter into the cervix with the tips of the fingers. This method is not so clean. Occasional tragedies have occurred through the douche being too hot.

If the operator be dissatisfied with the haemostasis obtained with the douche, the next step is to pack the uterus. If a ring forceps and posterior speculum have been used in giving the douche, then the stage is set and the packing can be carried out quickly and cleanly, using a uterine plugging forceps to pass the gauze so that it touches nothing but the speculum and the inside of the cervix; otherwise the pack must be introduced by the right hand and be pushed up into the fundus by the fingers. The latter is an efficient method of packing the uterus tightly and is free from the danger of instrumental perforation, but it is not nearly so clean. The material used for packing is iodoform gauze, 6 inches wide and long enough to pack the uterus with one piece. For domiciliary practice the jars of moist impregnated gauze put up by various firms are very satisfactory. A jar of such gauze should always be carried by anyone practising obstetrics; it will not be wanted often, but when it is it will be wanted very badly indeed. I never feel happy with a maternity case unless I know that plugging is available.

The pack should not be allowed to remain in the uterus for more than twenty-four hours, and in a great many cases may be removed in about eight hours. This applies only to those cases in which the haemorrhage was not of traumatic origin. Some authorities maintain that packing the uterus is worse than useless, stating that the uterus will stretch almost indefinitely with packing. This is not our experience, and if the patient dies from haemorrhage without having been packed the thought that packing might have saved her cannot be avoided.

Oxytocic Drugs

The danger of giving these drugs before the uterus is empty is that they may produce irregular contraction and make the subsequent removal of the placenta more difficult. Therefore we do not use them until exploration of the uterus has proved the absence of any "hour-glass" contraction. Pituitary extract 10 units and ergometrine 0.5 mg. are given by intramuscular injection. In ergometrine Professor Chassar Moir and his co-workers have given us a very powerful drug, which can be administered by the intramuscular or the intravenous route. Given in the latter way it acts with great rapidity, but for the man working alone the intravenous route is not always practicable, whereas the nurse can give an intramuscular injection. The ergometrine can be repeated, if required, and is free from the undesirable side-effects sometimes associated with pituitary extract. There is no doubt that the profession is under a debt of gratitude to Chassar Moir for his work in this field.

Now, with the bleeding arrested, the doctor can turn his attention to the restorative measures mentioned above. The administration of intravenous saline and glucose or saline and gum is a routine measure in hospital, but in domiciliary practice this is not so easy. Submammary saline, however, is easy to give, needs the minimum of apparatus, and is of great value as a restorative. If blood be available, transfusion will of course improve the patient's condition more quickly than anything else, and in recent years great advances have been made in the ease with which blood can be obtained. As a life-saving measure adequate amounts of blood must be used. In carrying out this scheme in the presence of active haemorrhage speed is essential, and valuable time is often wasted in arriving at a decision to remove the placenta manually and to pack the uterus.

True Atonic Haemorrhage

In this type the bleeding starts a variable time after delivery of the placenta; there is no bleeding in the third stage itself. The haemorrhage is often sudden and severe, and is apparently due to lack of retraction of the uterus. It is a dangerous type, as the severity of the bleeding may cause collapse and even death before help can be obtained. It may occur after perfectly normal labours, but is more common after difficult deliveries, necessitating the use of prolonged anaesthesia. In this connexion I would like to suggest that, whenever possible, the repair of extensive perineal lacerations should be postponed till the third stage is completed and the uterus firmly contracted. A further anaesthetic can then be safely administered.

Treatment.—The placenta being away, oxytocic drugs may be given at once. Indeed, many advise administration of such as a routine practice when the placenta is expelled. I think it certainly should be done where the patient has had an anaesthetic. A large number of cases require nothing more than this, together with abdominal massage of the uterus, but if the bleeding continues the treatment is the same as in the first type of haemorrhage discussed, after the placenta has been removed.

Traumatic Haemorrhage

The bleeding may arise from lacerations in any part of the genital tract, the most serious type resulting from lacerations of the cervix which involve the vaginal vault or spread up into the lower uterine segment. In most cases the diagnosis is made by observing that the bleeding still continues when the uterus is firmly contracted. Sometimes, however, it closely mimics the other types of haemorrhage, as the blood collects in the vaginal vault or even in the uterus and comes away in gushes or large clots when the uterus contracts or when efforts are made to express the placenta. It most commonly occurs after an operative delivery, but may happen, and be surprisingly severe, following an apparently normal and spontaneous labour. Haemorrhage due to partial separation of the placenta and traumatic haemorrhage not infrequently occur together, the result of the same train of events—a difficult operative delivery. Here, it is almost inevitable that the traumatic origin of the haemorrhage will be overlooked for some time. It should be suspected, and the genital tract thoroughly inspected, following deliveries of this type.

Treatment.—Where the laceration can be exposed in its entirety stitching will control the haemorrhage, but where the laceration extends into the vaginal vault or the lower uterine segment, the laceration, the uterus, and the vagina should be packed. It is impossible to reach the top of the laceration of this type with certainty, and time should not be wasted in trying. The placenta, of course, must

be removed before packing. As the portion of the pack which is actually in the rent controls the haemorrhage by pressure, caution must be exercised in its removal.

Conclusion

According to the investigations into the causes of maternal mortality, post-partum haemorrhage is responsible for 7.5 per cent. of the deaths in New York, 6.3 per cent. in England and Wales, and 3.9 per cent. in Scotland. In addition, it is a factor in deaths classified under shock, sepsis, placenta praevia, etc. Every effort should be made to reduce this mortality by:

1. Treatment of anaemia during the ante-natal period.
2. Refraining from interference with the normal uterine action during the third stage.
3. Realizing the danger of attempting delivery through the partially dilated cervix.
4. Early recognition of the failure of the normal mechanism of placental separation.
5. Having adequate equipment prepared to deal with the haemorrhage rapidly; particularly where the history or the patient's general condition suggests the likelihood of bleeding.

An ounce of forethought may save pints of blood.

Summary

The paper deals with the mechanism of separation of the placenta, suggesting that the Schultz method, rather than the Matthews Duncan, is the normal one.

Post-partum haemorrhage is divided into three classes: (1) placental site haemorrhage; (2) true atonic haemorrhage, where there is no bleeding till after delivery of the placenta; (3) traumatic haemorrhage, where the bleeding comes from lacerations in some part of the birth canal.

Premature separation of the placenta may be held to be the cause of the first type of haemorrhage. Causes of the separation are discussed, and signs and symptoms described.

Treatment of this type of haemorrhage is considered in some detail, particularly with regard to manual removal of the placenta and packing of the uterus.

The other two types of haemorrhage are dealt with briefly, but attention is called to the difficulty which sometimes arises in the diagnosis of traumatic haemorrhage.

In conclusion, some suggestions are made for lowering the mortality from this condition.

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In conjunction with the fifteenth annual Congress of Anaesthetists in Philadelphia from October 16 to 20 there will be sessions of the International Anaesthesia Research Society, the International College of Anaesthetists, the Eastern Society of Anaesthetists, and the Philadelphia County Dental Society. During that week also there will be in progress the Clinical Congress of Surgeons. A preliminary programme has been issued. It may be obtained from the secretaries of the constituent societies, or from Dr. H. W. Featherstone, 54, Newhall Street, Birmingham, or Dr. J. H. T. Challis, Pond House, Firs Walk, Woodford Green, Essex. Anaesthesia clinics will be held in various hospitals, also special research demonstrations. One afternoon and the following morning have been set aside for papers on current researches in anaesthesia and analgesia, and there will be various papers and discussions on the problems relating thereto. The memorial address on October 17 will be devoted to the life and work of the late Dr. Louis H. Maxson.

PRE- AND POST-OPERATIVE TREATMENT OF HEPATO-BILIARY DISEASES

BY

Professor B. O. C. PRIBRAM, L.R.C.P.Ed.

"A surgeon, unless he degenerates into a mere technician, must be a physician who operates."
—CONNELL.

Research in the last decade, especially concerning recurrent troubles after operation, has proved that there is practically no gall-stone disease where the liver is not affected to some degree. It must be stated that the stone formation in the external bile ducts is not always the primary pathological process, and that the liver is affected only in a secondary way. Hepatitis is often the primary change, and only followed by an affection of the external bile-duct apparatus and the gall-bladder. But obviously the changes in the external bile ducts, with all their complications and the immediate danger to life, become so outstanding and predominant that they must necessarily be the main object of treatment. On the other hand, medical treatment is from the very beginning, even when interrupted by surgical intervention, so important that the close co-operation of physician and surgeon should be considered from the outset of the disease. The expression "pre- and post-operative treatment" does not fully express the importance of the task of the physician and general practitioner. This close co-operation should be advocated from the very first also as regards the indications. We frequently observe a truly vicious circle concerning this important question. The physician advises an operation only if there is danger to life or where all conservative attempts have failed. Obviously the general state of the patient is then bad and the liver in a condition of latent or manifest insufficiency. The operative risk is great, the mortality high. This high mortality, on the other hand, makes the physician even more cautious, so that he advocates the operation only in an emergency. This vicious circle—high mortality, late indication; late indication, high mortality—should be broken either by the physician sending the patient to be operated on at an early stage of the disease or by the surgeon succeeding in improving the technique and lowering the operative mortality and thus convincing the physician of the efficiency of operative treatment.

The fate of our patients, not only regarding immediate recovery after operation but the chance to be free of all symptoms, depends to a large extent on the restoring of damaged functions of the liver. When reading the opening paper on the insufficiency of the liver from the surgical point of view, at the International Congress at Vichy in 1937, I was able to state that the majority of the disturbances of liver function in hepato-biliary diseases were due to hepatitis in the widest sense of the word. Therefore, the treatment of hepatitis from the very outset until a long time after the operation is one of the main tasks which we have to undertake. Another point is the choice of the most favourable time for operation. This concerns the important question of whether we must operate after the onset of the symptoms or whether there is a chance of improving the general state of the patient by medical treatment and postponing the operation until general conditions are more favourable. This point is especially important in the case of a mechanical occlusion of the common duct. It will be dealt with fully.

Acute Cholecystitis (Acute Occlusion of Cystic Duct)

The most alarming symptoms of acute cholecystitis appear when in an inflamed bladder a stone slips into the neck of the bladder or into the opening of the cystic duct, causing acute obstruction which can be immediately followed by a serious flaring up of a violent infection. The main dangers are perforation of the bladder in the abdominal cavity, causing general biliary peritonitis, or a partial or even total gangrene of the organ. Streptococci and coli bacilli are the most dangerous infecting germs.

In a number of cases an acute infarction and necrosis due to the stone without evidence of serious infection can be found as cause of the perforation of the bladder. Most surgeons prefer to operate in a state when the acute alarming symptoms are settling down, and by careful observation we are sometimes undoubtedly able to postpone the operation until the process is more localized; but a permanent careful observation is indispensable in order to be prepared to operate immediately when the danger of perforation or gangrene increases. I have found that there is a difference in opinion whether hot fomentations or ice should be applied in such cases, as it has been decided to wait before performing the operation. There can be no doubt that in acute cases hot fomentations increase the danger of perforation and spreading of the infection, because the course of all vital processes, especially inflammatory ones, is intensified by high temperature, whereas we can achieve a slowing down of the process by lowering the temperature by means of ice. So there should be a rule that in acute stages of localized peritonitis and danger of perforation ice should be applied in order to retard the local process and gain time for the body to increase its resistance to the infection and, on the spot, to localize the infection by adhesions. Indeed, in most cases we obtain a quick localization by applying ice bottles for a few days. Hot fomentations should be kept for the later course, when absorption of the exudate is the purpose of our treatment.

The reluctance of most surgeons to operate in the very acute stages has been due to the fact that statistical figures have proved that the operative risk is higher in the acute than in the more chronic stage. But I must say that when applying the modern electrosurgical operation (mucoclasis)* this difference between operating in an acute or chronic state no longer exists. By means of electrocoagulation we can practically sterilize all abscesses, and the reaction of the surrounding tissue is so favourably increased that the tendency to heal is improved, and this to such an extent that we are able to close primarily the abdominal wall even in acute and badly infected cases; so I should think that there is no need to worry as to whether we can overcome the acute stage when other indications point for an early operation.

Pre-operative Liver Treatment

It might be observed that the most frequent response of the liver in hepato-biliary diseases, especially in the case of acute infection, is a marked oedema of the liver, comparable to oedema of all infected tissues. This oedema of the liver causes the organ to be considerably enlarged. I have found such an oedematous liver of a soft and frail consistency, reaching more than a handbreadth under the costal arch. This oedema is characterized by its fleeting character. It is the very first stage of hepatitis, and can be distinguished from the so-called "serous inflammation" (Rössle, Eppinger) by the fact that, whereas in the latter case the exudation is rich in proteins, in the case of the oedema mentioned exudation contains scarcely any albumin and can be reabsorbed very quickly by the blood capillaries themselves. We sometimes encounter this liver oedema only as a sign of a functional weakness of the liver during digestion. The fact that in some persons it is observed after the intake of a special kind of food, towards which the patient is particularly intolerant, sometimes gives this oedema an allergic character. However, it is always a sign of functional weakness. The combating of this acute oedema is a very important task in the pre- and post-operative treatment of the liver, and this can be achieved quite easily by osmotic therapy when dehydrating the liver by intravenous injection of hypertonic solutions. Thus we start the pre-operative treatment of our patients a few days before the operation with daily intravenous injections of 50 per cent. glucose combined with calcium.† The effect of this procedure can be observed in a striking way: the enlargement of the liver diminishes and the undue pressure in the epigastrium, which the patient felt previously as a symptom of the tension of Glisson's capsule, very soon relaxes.

Cardiovascular Preparation

Some physicians and surgeons advocate treatment with digitalis or other cardiac stimulants before operation in all cases. We are rather reluctant to do so, and have always found, in intimate collaboration with our consulting physicians, that the pre-operative cardiovascular treatment of all cases as a routine is not necessary or even advisable. We limit cardiac treatment to the demands of a special case, and must say that, according to our experience, the strain of the operation on the patient's heart has been rather overrated. If we analyse all cases with fatal issue we can find scarcely one that is evidently due to overstrain of the heart and circulation immediately after the operation. Cases of acute cardiovascular collapse occur, however, following removal of an obstruction of the common duct and the resulting sudden decompression. This condition is later dealt with more fully.

The most striking case I have observed is that of a woman of 73 with cholaemia, septicaemia, and diabetes due to chronic pancreatitis. Before the anaesthetic could be administered she suffered a serious circulatory collapse on the operating table, and for one hour we had to apply all kinds of stimulants before we could start. The operation, which was quickly performed under spinal anaesthesia (mucoclasis of the empyematous bladder and removal of a common duct stone), was undergone by the patient without the slightest change in the circulatory conditions. Apart from the heart trouble from which she has suffered for years, she now—eight years after the operation and at the age of 81—enjoys a satisfactory general state of health.

The cardiovascular disturbance in the post-operative course, starting mainly from the third or fourth day, is in most cases a purely secondary one, due to absorption of toxic products from the operation field. These toxic products are frequently proteinogenous products of histamine character, but also bacteriogenic toxins, all damaging to peripheral circulation and causing lowering of the blood pressure.

This toxic insufficiency of the peripheral circulation is best combated by an intravenous-drip infusion, which, according to my experience, has proved very satisfactory in the detoxication of the patient and the improvement of the whole circulation. The choice of the solution is

* Pribram, 1929.

† 10 c.cm. of a 10 per cent. solution of calcium gluconate.

important. I often apply glucose and saline, but have found a mixture of citrate-salt solutions in addition very helpful. The patient should not perspire, even when a drip-infusion is continued for four or five days. Perspiration is a sign that the solution has not been retained in the blood vessels and that it permeates the capillaries. If there is any inclination to perspire, a 1 per cent. calcium citrate solution should be added to the intravenous infusion. Parathormone injections (5 units), retaining the calcium level in the blood, have also proved useful. In cases where the peritoneum is endangered by infection, the application of coli serum, or anti-gas-gangrene serum has proved extremely satisfactory. 20 c.cm. of coli serum (200–500 units) intramuscularly, and 5 c.cm. of anti-gas serum (10,000 units) in the first three days. We do not know whether it is indeed specific, or whether the results arise from a general effect of serum; but there can be no doubt as to its efficiency, and in view of my experience during the last ten years I can warmly recommend this treatment. The effect has sometimes been so striking that I do not hesitate to say that a number of patients seriously endangered by the toxic products absorbed from the inflamed peritoneum were saved by use of this serum.

Prophylaxis of Cholaemic Haemorrhage

Post-operative haemorrhage in cases of jaundice is one of the most serious and often fatal complications. It is the main fear in cases where the jaundice has already lasted several weeks before operation. Concerning this point we can say that the danger of this haemorrhage has, according to our statistical figures, diminished considerably through the means we have adopted. The best prophylaxis against cholaemic haemorrhage we have found in the perfecting of the surgical methods—electrosurgical operations (mucoclasis), exact peritonization, and the simplification of the operation for common duct stones by the ether method—but, putting aside these purely technical advances, one of the main points is that operation should not be postponed when a diagnosis of mechanical occlusion has been established. It was the general rule to wait for three to six weeks and to apply conservative treatment until the decision to operate was made. The reason given was that the occluding stone might pass the papilla spontaneously—and we must sometimes wait to see whether this expectation is fulfilled. This period seems to me much too long. The chance that we try to give the patient by postponing the operation involves great danger of a considerable increase of the operative risk, when at last we are forced to operate. Our modern method enables us to make the diagnosis of the mechanical obstruction in a very short time and with a high degree of certainty. The daily determination of bilirubin in the blood serum has proved very helpful. The rapid rise of the bilirubin curve after attack, and its maintenance at a certain level or its further slow increase, is a definite sign of acute obstruction which is unlikely to be removed by conservative methods. Any further delay in operating serves no useful purpose, but increases the operative risk because of progressive damage to the liver. Much more difficult is the diagnosis and indication in cases where the fall of the bilirubin curve and the appearance of bile dyes in the stool suggest that the papilla has become free. The patient should be given every chance by postponing the operation, which can be performed under far more favourable conditions when the tissues are free from bilirubin. We would be wrong, however, in concluding from a falling bilirubin curve that the stones had in fact passed the papilla and the common duct had been emptied of stones. Indeed, one is sometimes surprised to find the common duct filled with stones high up into the hepatic ducts in spite of the fact that the bilirubin content of the blood has become normal. The explanation is often that a piece of stone has slipped into the papilla or that an acute spasm of the sphincter round the stone made the obstruction complete and was the cause of the clinical attack. The spasm having relaxed, the bile can again drain past the stones into the duodenum. It is not always a so-called "successful attack"—that is, with stones passing through the papilla—but merely a *change in the position of the stones*, which may in a short time again take a turn for the worse. *A falling bilirubin curve, therefore, should not affect our decision to operate at all.* We should only take advantage of the opportunity to operate when the tissues are free from bile dyes and the liver has recovered. We never know whether a fresh attack may again destroy these favourable conditions. We must insist on the necessity of early operation in these cases because our therapeutical results, where there is already a manifest insufficiency of the liver, are somewhat unsatisfactory.

These general rules for an early operation on an obstructed common duct should always be observed. As for the medical prophylaxis, we might state that the popular calcium treatment should be supported by application of parathormone, the hormone of the parathyroid gland (0.5–1 c.cm. intramuscularly or intravenously). Whereas in the case of calcium application the calcium level in the blood serum falls quickly after a certain time, after parathormone application the calcium remains on a higher level. We can warmly recommend this parathormone-calcium treatment in all cases endangered by cholaemic bleeding.

Another way to influence the haemorrhagic state in the case of jaundice is by the application of vitamins. A number of observations indicate various relations between deficiency of vitamins and the tendency to haemorrhagic diathesis, so the analysis of these factors is not quite clear. The fat-soluble vitamins A and D facilitate the resorption of calcium and phosphorus from the intestines; but the resorption of these vitamins from the intestinal tract is interfered with by the absence of bile acids. B-carotene, the precursor of vitamin A, is not absorbed at all in the absence of bile, so we can easily explain a relative deficiency of this vitamin in the case of obstructive jaundice. To the water-soluble vitamin C the control of nutrition of the capillaries is attributed. Just recently the influence of vitamin K on haemorrhagic diathesis has been studied and its value emphasized. From a practical point of view I have the definite impression that vitamin therapy is useful in cases of jaundice. I give the vitamin C in the form of orange juice, with glucose, if the intake of fluid is not impaired, or by injection of redoxon (Roche). Vitamin D can be assimilated by giving 30 drops of viosterol three times a day. Vitamin K is not yet available for general use.

Post-operative Acute Insufficiency of the Liver

Acute insufficiency of the liver in the post-operative course is the most serious complication, and is to a high degree fatal. Clinically the patients become more and more sleepy, and this condition ends in cholaemic coma eight to ten days after the operation. Anatomically we find an acute necrosing hepatitis, and, we may say, also an acute atrophy with extensive fatty degeneration. The liver

cells are full of fat, while glycogen is very poor or entirely absent, and this even when we have given a large amount of glucose as a pre- and post-operative measure. In these cases the liver cells have irreparably lost their main vital function of storing glycogen. The largest supply of glucose with insulin in addition is no longer capable of restoring this function. However, when treating these serious cases the best thing is to apply glucose with a few units of insulin in an intravenous-drip infusion (1 unit to 4 grammes of glucose). We may add calcium and parathormone.

The best way is undoubtedly to avoid the development of such a breakdown of the liver function by an early operation. A definite form of this acute insufficiency sometimes follows upon too sudden an outflow of bile from the common duct after removal of an obstruction. To give an example: We operate on a patient with obstruction of the common duct that has lasted for weeks and even months. The jaundice is considerable, but the patient is apparently still in a satisfactory state of health. The liver works just enough to meet the daily demands. The operation is quite easy and can be quickly performed. The ampulla of Vater can be easily freed by a supraduodenal incision. We introduce a drain into the common duct and the prognosis seems to be quite favourable. The first three or four days following the operation are satisfactory, and the recovery appears normal. Intestinal motion has already set in and the patient seems to be saved. From the fifth to the eighth day a tendency to sleepiness causes some worry, as the first sign of a turn for the worse. The sleepiness increases during the next few days, and the patient sleeps almost the whole time and can be kept awake only with difficulty and for short periods. Between the eighth and tenth days following the operation the patient dies.

One feels that before the operation there was functional equilibrium of the liver, in spite of the fact that the liver cells were extremely damaged. It appears that the fact of having removed an obstacle, so obviously noxious, has caused a total collapse of the liver function. I have called this state "acute insufficiency of the liver following decompression." It seems that a sudden decrease of pressure in the common duct, after opening it and removing the obstruction, must be regarded at least as one cause of the collapse of the organ.

We have quite a number of analogies in pathology. We must distinguish two forms of such an acute functional collapse after decompression. In one form the state of the heart and circulation is sufficient until the last condition; in other cases cardiovascular symptoms following such a sudden change in the bile duct prevail from the outset. Both types, however, end in a coma which must be regarded as the immediate cause of death.

I have tried to find an explanation for this acute cardiovascular collapse. The liver is not only an admirably working chemical factory but also an organ annexed to the blood circulation. The liver is able to store 20 per cent. of the total amount of blood, and, through this property, is a direct circulatory assistant to the right heart. It relieves the right auricle in the case of insufficiency.

An obstacle in the common duct causes increased pressure and dilatation of the intrahepatic bile ducts. A sudden decrease of this pressure to zero, or even below, causes an afflux of blood, an increase of the blood store in the liver, and the diminution of the amount of circulating blood. It may thus give rise to a serious collapse of the peripheral circulation, especially when this has already been damaged. This collapse, following the removal of an obstacle and a sudden fall of pressure, is well known in the case of tapping of an ascites, a pleural effusion, or even after an abrupt emptying of a full bladder by catheterization. This organ collapse, and the acute insufficiency of the liver following removal of an obstruction and the sudden decompression, was the subject of study for several years. The practical conclusion was that it would be better to avoid too sudden a fall of pressure in the bile duct when draining, so I never again resorted to drainage of the hepatic duct, but introduced a rubber tube downwards into the common duct, where it was stitched watertight and the drainage allowed simply as a kind of overflow. But even this overflow was allowed only slowly, and was interrupted by closing the tube temporarily with a clamp. I can recommend this procedure as useful, according to my experience. Another suggestion is to abstain from any external drainage in the case of a greatly damaged liver, where we fear a sudden collapse, and to perform instead a choledochoduodenostomy. This procedure can be advocated in cases where there is not a serious infection of the bile ducts.

I have found this operation quite satisfactory in many cases, but I would not go so far as Finsterer and other surgeons in the indication for it—the mortality, according to Finsterer's statistics, still being 9.6 per cent., which is considerably higher than our own figures. Another way to avoid this acute liver collapse is by primary suture of the common duct after removal of stones. I have had splendid instances of recovery after suture of the common duct, but this procedure is in my opinion justified only in cases where a solitary cholesterol stone has caused the obstruction and there is no doubt that this stone is the only one. In all other cases I think it advisable to satisfy ourselves of the state of the common duct by radiographs in the post-operative course (cholangiography).

Post-operative Bowel Motion

I am not in favour of forcing the bowels to move in the first three days after operation. For twenty-four to thirty-six hours the bowels are practically always paralysed, but this not only causes no harm, but the rest provides the best conditions for the abdominal wounds to heal and for inflammatory processes to localize. When the conditions in the abdominal cavity appear to become grave the intestines start to move almost without help. On the other hand, when there is an uncontrolled inflammation any movement excited by forcible means (purgatives, irritants, etc.) may cause a spread of the inflammation. The only thing I do is to give an injection of 20 c.cm. of glycerin into the rectum when the bowels have already started to move; but the rhythm is still disturbed, and the purpose is not achieved. I do not give any oral purgative as a rule before the fifth day. Should peristalsis be delayed in spite of absence of any peritoneal irritation 1/60 grain of physostigmine or prostigmin intravenously has always a reliable effect.

Post-operative Complications

Finally, one cannot insist too much on the post-operative care of the patient, so as to avoid complications affecting the lungs, thrombosis, and embolism.

Lung Complications.—In all operations of the right hypochondrium the right lower lobe of the lung is in some danger through diminished movement of the diaphragm, and also through the direct spreading of infection by the lymphatics. Some of the lung complications are

due to small embolisms arising from infected thrombotic veins in the field of operation. I have no doubt that tamponage of the wounds is sometimes to blame for this. In operating for hepato-biliary diseases I have abandoned tamponage for nearly fifteen years. If drainage is necessary only a rubber drain should be used.

As a prophylactic measure, from the very first day after operation, *breathing exercises*, with lifting and massaging of the legs, have proved helpful. Injections of quinine and calcium 10 per cent. solution have undoubtedly been of benefit in avoiding bronchopneumonia or in aborting it in the very beginning.

Recovery after an operation for hepato-biliary diseases is, when performed in an early stage, almost complete, and the patient does not need any special help. In advanced cases, on the other hand, the number of complications which may arise in the post-operative course may be considerable. As shown above, many of these complications can be avoided by improvement and simplification of surgical technique; but I am also convinced that careful vigilance and treatment in the post-operative course may still save quite a number of patients who are endangered by the manifold complications that may arise in spite of a successful operation.

Summary

In hepato-biliary diseases close co-operation is indispensable between physician and surgeon from the very beginning. This co-operation should concern indication and treatment. When resorting to the electrosurgical method (mucoclasis) operation at a very acute stage does not result in greater risk than when done in a chronic stage, and we no longer need to undertake the danger which the postponement of an early operation may involve.

Treatment of Hepatitis.—The pre- and post-operative treatment of hepatitis, based on hepatic insufficiency, is one of the main tasks of the physician from the very beginning. One of the earliest and most frequent symptoms of acute hepatitis, the acute fleeting oedema of the liver, must be considered. This can be combated very efficiently by means of intravenous injections of hypertonic solution (50 per cent. glucose).

Complications of the Peritoneum.—In cases of peritonitis, injections of coli serum or anti-gas-gangrene serum have proved very efficacious.

Cholaemic haemorrhage is best avoided by early operation and by the simplification of the operative technique (electrosurgical operation, exact peritonization, ether method). Calcium and parathormone injections have proved helpful. Vitamin therapy also gave promising results.

C. C. Macklin (*Med. Rec.*, 1939, **150**, 5), in an investigation of spontaneous mediastinal emphysema, found experimental corroboration of the physical basis of Hamman's sign (a loud "crunching" sound heard over the praecordium and associated with diminution or obliteration of cardiac dullness) in the foam-like blanket of air bubbles seen upon removal of the sternum in cats whose lungs had been locally over-inflated by an air blast introduced into the lower right bronchial tree by way of a catheter. The air was never within the pericardium, but always between the parietal pericardium and the pleura. The air enters the mediastinum through the lung root, and its presence embarrasses the circulation by pressing upon the heart and great vessels. Anginoid pain may be due to direct pressure upon the coronary vessels. Extension upwards, downwards, and laterally into the opposite lung was found

NEPHRECTOMY WITH PARTIAL RESECTION OF THE OTHER KIDNEY

BY

R. CAMPBELL BEGG, M.D., F.R.C.S.Ed., F.A.C.S., F.R.A.C.S.

Cases in which more than 50 per cent. of the total renal substance has been removed appear to be rare enough to warrant this report.

Case History

The patient was a married woman of 39 known to be suffering from branched calculi in both kidneys. The urine was infected with *Bacillus coli* and streptococci. For some eight years her life had been rendered miserable and uncertain owing to repeated attacks of pyrexia, renal colic, alternately on each side, and, latterly, menacing attacks of anuria from which she narrowly escaped.

Although there was no great discrepancy in the size of the stones as seen on the *x*-ray film, intravenous pyelography demonstrated that the right kidney was quite active, while the left exhibited no apparent function. Clinical examination together with the history pointed strongly to a left pyonephrosis with a probable secondary perinephric abscess. No alternative presented itself between leaving her to die or endeavouring to effect a cure by operation. The first urge was to remove the main septic focus, re-establish her health, and then deal with the remaining right kidney. The recent history of anuria, however, doubtless due to intermittent blocking of the right ureter, left the uncomfortable feeling that such an attack following left nephrectomy was not only probable but would certainly be fatal.

In order to establish a safety-valve it was accordingly decided to drain the right kidney pelvis after removing the stone and carry out prolonged drainage to secure disinfection and make the inevitable left nephrectomy safe against post-operative anuria. When, however, on June 2, 1937, the right kidney was exposed for this purpose, it was found that crumbling projections of the calculus so filled the minor calices of the lower pole with gritty debris, and the tissues were so frayed and impregnated with pus, that rapid recurrence of the stone seemed inevitable. The lower pole was accordingly amputated at the level of the lower margin of the pelvis, a little more than one-quarter of the kidney being excised. Haemorrhage was checked with ribbon catgut and muscle graft. It was some three days before the insulted organ began to excrete urine through the Malécot tube in the pelvis. After that the flow was copious, while the absence of anything from the bladder except occasional emissions of thick creamy pus confirmed the suspected condition of the other kidney.

The hope that the planned left nephrectomy could be carried out at leisure was nullified by the fierce septic reaction which the lowered resistance caused by the operation permitted. There was a persistent swinging temperature, with evening rises as high as 102° F. The patient's condition steadily deteriorated. By the end of June the red blood count was less than 3,000,000 and haemoglobin was 48 per cent., and it was clear that further delay would secure nothing except still more unfavourable conditions for the inevitable but serious operation in prospect.

The tube had slipped out of the right renal pelvis on the tenth day and could not be replaced. The urine began to pass via the bladder. Providentially, a couple of days before the projected operation the safety-valve re-established itself and all the urine came from the side. The conditions for a clean field with all this soakage were not ideal, and the operation itself was even more difficult than expected. Not one, but two separate perinephric abscesses were encountered on the way to the kidney, one close under the diaphragm. Sharp dissection and the resection of part of the eleventh rib, the twelfth being very short, were necessary before the solid adherent mass of kidney and perinephric tissues were freed

and the broad and friable pedicle ligated *en masse* and without finesse. An attempt at pre-operative blood transfusion had failed owing to absence of accessible veins, the last of these having been thrombosed by the perabrodil for the pyelogram. At the end of the operation collapse was extreme, being at one stage hardly distinguishable from death, the pulse being imperceptible, the pallor absolute, and the pupils widely dilated. Donor's blood stored overnight was pumped into the internal malleolar vein, gravity being quite insufficient to force the fluid into the collapsed vessels.

On the patient's return to bed her condition remained critical. Enough saline and glucose was administered by the subcutaneous route to enable all fluid by the mouth to be withheld till after forty-eight hours, and thus the additional menace of distension and sickness was completely avoided. Nursing taxed to the uttermost the skill of those engaged. The bed remained soaked with the whole output of the right kidney augmented by the stinking sero-sanguineous fluid from the left wound, which cast off alarming masses of slough, and showed for the first week no healing action in spite of the institution of Carrel-Dakin tubes.

In the course of the next five weeks matters gradually improved; the wound became healthier, the temperature, which had had a daily swing up to 101° or 102° F., dropped to normal, and on August 24 the patient was discharged from hospital, although a deep sinus still persisted on the left side. All the urine was passing to the bladder, and the right wound had healed. During the whole of the period of stress the right kidney had never faltered, producing a copious supply of urine, which, when it could be measured, proved to be some 75 oz. daily with a normal consumption of fluid.

Convalescence was fairly rapid, the left wound healing firmly in spite of the loose emergency sewing and the massive sloughs. A small sinus persisted, but is now shallow and should soon heal. Careful administration of mandelates cleared the right kidney of its remaining infection. The calculi consisted of calcium and triple phosphates with a trace of calcium carbonate. Diet was directed to maintaining acidity so as to prevent recurrence.

At the time of writing, approximately two years since the operations were done, the condition is as follows. The patient is robust, active, and able to undertake all the social duties, rail, steamer, and motor travelling of a normal woman. From these things she had been debarred during the period of her pre-operative invalidism, which extended over rather more than nine years. She eats what she likes, and the urine has no tendency to depart from an acid reaction, though she takes a daily dose of acid sodium phosphate or a tablet of ammonium chloride to make sure. The specific gravity of the urine, which is sterile, rarely exceeds 1012, though it has on one or two occasions gone as high as 1015. The increased quantity necessitated by this dilution causes her to rise in the early morning hours to empty the bladder. There is no unpleasant diurnal frequency or irritation. The absence of veins precludes a pyelogram and function tests depending on the extraction of venous blood, but the urea concentration after taking 15 grammes of urea reached the surprising figure of 2.4 per cent. at the third hour. The blood pressure has dropped from 164/90 before the operation to 130/80.

Discussion

Reflecting on the problem involved, one or two points seem to call for emphasis. In the first place, careful thought should be given in cases of bilateral calculus to the possibility of one kidney being pyonephrotic and useless, in which case it can, with due precautions, be removed and the disability be in large part eliminated. Secondly, there is no doubt that the percaine spinal anaesthetic employed in the second operation put the minimum burden on the remaining part of the right kidney, and by reducing the operative difficulties allowed the left kidney to be removed before the patient succumbed. Thirdly, some device for forcing the blood into the veins must be contemplated when, as in this case, gravity is inadequate for the purpose. Finally, the tempting procedure of two-stage nephrectomy does not seem to be appropriate in such cases, with its prospect of prolonged suppuration and the probable unbearable strain it would exert on the remaining portion of a mutilated and infected kidney on the other side. In spite of perinephric abscesses and the difficult operation which must always be expected, the procedure of nephrectomy, once embarked upon, must be carried through to the end.

Johannesburg.

ALTERNATING HEMIPARETIC MIGRAINE SYNDROME

BY

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The current literature and the textbooks of neurology, both recent and of the past, relate many unusual symptoms occurring as part of a migraine syndrome. It is only rarely that these symptoms are combined in the manner observed in the mother and daughter whose cases are here recorded.

The Mother's Case

There is no history of nervous or mental disorder, migraine, epilepsy, asthma, or allergic disorder in any member of the mother's family. She had severe migraine headaches, starting at 13 years of age. Menarche did not occur until 16 years of age. During the years following her menses seemed to have little association with the severe migraine syndrome. Her headaches were infrequent, at times being absent for a period of one to two years. Her symptoms usually followed a definite order of progression. Prodromes in the nature of general malaise and chilliness occurred, which might come on the day before an attack or only a brief period before. The attack itself was ushered in by a feeling of numbness and tingling of one side of the face and tongue, rapidly spreading to involve the arm and leg of that side, and was accompanied by marked weakness and loss of power in the arm and leg, although never a complete paralysis. Her speech was thick and dysarthric, and there was difficulty in finding words and in expressing herself. Following this, she experienced flashes of light, then blurred vision, and finally a hemianopsia involving the visual field opposite to the severe bursting headache which then appeared over or behind the eye on the side opposite to her other symptoms. Nausea and vomiting followed the headache, which in different attacks occurred first on one side of the head and then the other, and was always on the side opposite to the hemiparesis, sensory, and visual symptoms. She never lost consciousness, nor did she have any convulsive attack, although on one occasion during her first pregnancy (not with the daughter) she became confused and delirious, and had no memory for the migrainous episode other than the onset. No medication ever seemed to relieve or abort the attacks, which lasted from one to two days. During the time she was pregnant with the daughter she had no migrainous attacks. Three years ago, at the age of 46, the mother was treated with radium for a uterine carcinoma. Her menses stopped. She has had no migraine headaches since, and is in fairly good health at the present time.

The Daughter's Case

The daughter, aged 23, has been under observation at the Jordanburn Nerve Hospital, Edinburgh. She gives a history (corroborated by her mother) of severe unilateral headaches, having their onset when she was 13 years of age, occurring

about the time of the onset of menarche, although it is thought that her menses followed her first migraine attack. The daughter was aware of the severe headaches experienced by the mother before the onset of her own attacks, but both mother and daughter maintain that the daughter knew nothing of the symptoms experienced by the mother, and was not aware that the headache was always on one side of the head and the weakness, sensory, and visual disturbance on the side opposite to that of the headache. The daughter's attacks are very similar to those of her mother except for the severe delirium, confusion, and amnesia which she often has. The daughter has noticed that a severe migrainous headache seems to be precipitated whenever her menstrual period is irregular and runs over the usual twenty-eight-day interval. She is also sensitive to fats and fatty foods, and reacts to them with nausea and vomiting, although she has had no migraine headaches which resulted directly from such foods.

The daughter states that she usually can foretell the onset of a migrainous attack, as she experiences a general feeling of malaise, which not infrequently follows a period when she feels exceptionally well. This malaise is of an indefinite character, at times accompanied by a feeling of chilliness and at others by a feeling of languor and lassitude. Marital and domestic difficulties at the present time seem to be of importance in producing emotional turmoil, which may act as a precipitating factor. These emotional difficulties cannot be considered aetiological, as they were not present during the first seven years following the onset of the migraine attacks, and, from a careful review of psychosexual and emotional factors of childhood, no emotionally toned associations were discovered which seemed to have a bearing on the migraine syndrome.

SYMPTOMS

Usually within a few hours of the onset of the above-mentioned prodromes she experiences numbness and tingling, which may start either in the face or tongue, or as a tingling sensation running down the nose. As the first symptom there may be numbness and tingling of the fingers and hand of the same side. This numbness and tingling may spread to involve the lower leg and foot of the same side, or may involve the hand and fingers chiefly and affect the leg only as a marked weakness. The weakness in the hand or leg never amounts to a complete paralysis, although she is unable to walk or to hold articles in the hand on the side involved. This hemiparesis may persist during the entire attack, though as a rule the severity of the hemiparesis has been found by the patient to be a good indicator of the intensity of the headache which is to follow. At times the hemiparesis seems to lessen after the onset of headache. Coincident with the hemiparesis and peripheral sensory symptoms she notices a feeling of thickness and clumsiness of her tongue and an inability to express herself or to understand what is said to her. The aphasic symptoms do not seem to be more prominent when the headaches are right-sided or when they are left-sided. She is predominantly left-handed, although ambidextrous in many respects.

Flashes of light and zigzag streaks of light follow the hemiparetic and peripheral sensory symptoms, and appear in the visual field on the same side as those symptoms. Flashes of light give way to a general blurring of vision, and finally a compiete hemianopsia develops. In some of the attacks visual symptoms precede rather than follow the hemiparetic symptoms. It is only after these events have taken place that she experiences any headache. The headache, when it occurs, is always on the side opposite to the other symptoms described, although the attacks are of an alternating character (like those described in her mother) and she suffers from headache on one side of the head as much as on the other. The headache starts as a throbbing, bursting pain back of the eye, and the patient says she has the feeling that her eye on that side is prominent, and actually "popping out of my head." With the onset of the pain she frequently becomes confused and delirious, and remembers little or nothing of what takes place. Nausea and vomiting come on about thirty minutes to an hour after the onset of headache, and are unusual'y severe. Confusion and amnesia occurred with her first attack at 13 years of age, and at 15 and 17 she had recurrent headaches for a week to ten days, with complete amnesia for all events except the onset of the attack. She has never had a period of more than two months' freedom from an attack of migraine. In addition the patient has had attacks occurring at night, during sleep. She does not experience the usual prodromes with these attacks, nor does she have the usual hemiparetic symptoms. She generally awakens in the morning to find that she has a mild throbbing pain back of one eye and a general feeling of drowsiness and torpor, which, she says, feels very much like an attack of migraine that is subsiding. She has never had a convulsive seizure that she knows of, nor have any been observed by the mother.

EXAMINATION

The daughter was seen about two hours after the onset of one of her severe migrainous attacks. The headache was on the right side. Her face appeared pale and drawn. She seemed dazed and confused, and was quite uncooperative for special sensory, visual, or aphasic testing. Her eyes were mildly prominent, with a definite stare. The pupils were unusually active to light, particularly the right pupil, which exhibited a marked constriction and tonic response to light. No ocular palsies or nystagmus were made out, although the patient was not co-operative. The tendon reflexes were absent in the left arm but present in the right. Tendon reflexes in the lower extremities were equal and active. No Babinski or abnormal plantar response was elicited. Nausea and vomiting were severe. Following the severe headache, which lasted about twelve hours, she felt tired and languid, and her face continued to appear pale and drawn. There was tenderness and hypersensitivity of the scalp on the right. Tendon reflexes had returned to the left arm, and the pupillary response to light became normal. The patient recalled the onset of the attack, but had very little memory for events after the onset of severe pain back of the right eye. Physical examination in the interval between attacks shows general malnutrition, asthenic body build, poor posture, lumbar lordosis, and retroversion of the uterus. A mild secondary anaemia was present (haemoglobin 72 per cent.). A radiograph of the skull was negative. Neurological examination revealed no abnormalities.

Treatment.—Ergotamine tartrate (0.0005 gramme), given intramuscularly at the onset of one attack, altered the syndrome, as no hemianopsia or paresis of the extremities developed. The headache, nausea, vomiting, and confusion were not relieved. The patient is being treated with oestrogenic hormone in an attempt to regulate her menses and also to evaluate, if possible, the effect on the migraine syndrome. She is to be given ergotamine tartrate again should this effort at hormone therapy prove unsuccessful.

Conclusion

These two case reports are of special interest by reason of the nature of the migraine attack and the fact that the mother and daughter were affected in a similar manner. The aetiology of the migraine attacks is not discussed, although the endocrine and vasomotor features seem to be the most likely factors.

I am greatly indebted to Dr. D. K. Henderson, professor of psychiatry, University of Edinburgh, and physician-superintendent of the Royal Edinburgh Hospital for Mental Disorders, for permission to publish these cases.

The B.B.C. announces that on Wednesday, September 13, the first of a series of five talks on first aid will be given by a London surgeon. The talks will begin at 6.30 p.m. in the National programme, and the remaining four will be heard on September 14, 16, 19, and 21. The first talk will outline the general principles of first aid, the second deals with different types of wounds, the third with fractures, and the fourth with burns and scalds. The fifth will be devoted to revision and answers to questions. Diagrams to illustrate these talks will be published in the *Radio Times*.

Clinical Memoranda

Hydatid Cyst simulating Enlargement of the Prostate Gland

The following case is of interest in view of the unusual site of the cyst.

CASE REPORT

A roadman aged 48, employed by a rural district council, was admitted to the Denbighshire Infirmary suffering from painful micturition and with increasing dysuria of some months' duration. There was considerable loss of weight. The bladder was palpable midway between the pubes and the umbilicus, and on rectal examination a soft mass could be felt, which I took to be an unduly enlarged prostate. The urea-concentration and blood-urea tests were normal. The bladder was drained per urethram for a period of ten days and was then opened by the usual suprapubic incision and the neck of the bladder explored. There was no enlargement of the prostate gland, but a mass was felt, which pushed the base of the bladder forward. It was the size of a large orange and cystic. In trying to feel the extent of the swelling I accidentally ruptured the cyst, and the characteristic daughter cysts exuded, making the diagnosis obvious. The wall of the cyst posteriorly was at least three-quarters of an inch thick and calcified. It was emptied of its contents, but excision was impossible as the cyst was incorporated in the posterior bladder wall. I was in some doubt as to how to deal with the condition, and finally decided to drain through the suprapubic incision only. The patient made a good recovery and, apart from occasional attacks of cystitis, has kept well and has gained considerably in weight.

A radiograph of the bladder taken eighteen months later, after the introduction of a 15 per cent. solution of sodium bromide, was interesting. It showed the bladder shadow with an irregular darker shadow, the size of an egg, superimposed on and lying behind it. This was evidently the remains of the cyst, with the calcified wall showing up well.

Denbigh. J. TREVOR LEWIS, M.B., B.Ch., M.R.C.S.

A Case of Double Intussusception

The following case appears to be interesting enough for publication.

CASE HISTORY

A male child aged 8 months was admitted to the Transvaal Memorial Hospital for Children with vomiting, collapse, and the passing of blood per rectum. The duration of the illness was thirty-six hours, and the diagnosis intussusception.

Operation.—Fifteen minutes after admission the abdomen was opened one and a half inches to the right of the mid-line, the incision passing through the skin and the rectus sheath, and the rectus muscle split longitudinally. Free sanious fluid was found on opening the peritoneum. An intussusception was seen extending from the right iliac fossa round to the sigmoid colon. Reduction was partially effected to about the middle of the transverse colon by means of the index and middle fingers in the abdominal cavity. The rest of the mass was then delivered through the abdominal wound and further reduction begun. With some difficulty the ileo-caecal intussusception was reduced. We were then faced with a dark mass consisting of an ileo-ileal invagination, the origin of which was a raised inflamed mass of mucosa. As there was no likelihood of further reduction and as that portion of the bowel was not viable, the mass was resected and an end-to-end anastomosis done. A drainage tube was inserted into the ileum proximal to the anastomosis. (See Figs. 1–4 for progress of reduction and resection.)

The child subsequently developed bronchopneumonia; but despite all this he recovered, and is now perfectly well.

FIG. 1.—A: Oedematous mass in small gut causing ileo-ileal intussusception. B: Showing invagination of caecum, also causing ileo-caecal intussusception. Partial reduction

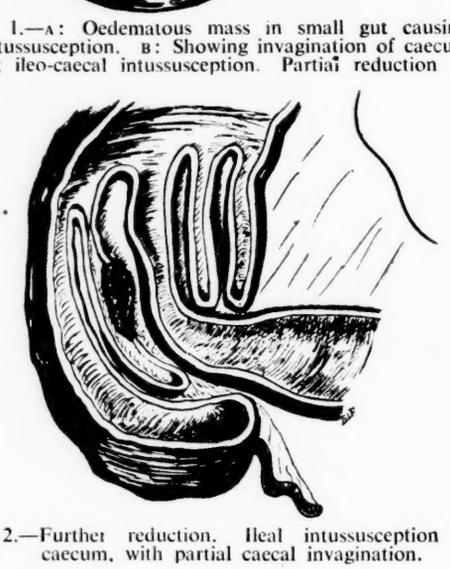

FIG. 2.—Further reduction. Ileal intussusception inside caecum, with partial caecal invagination.

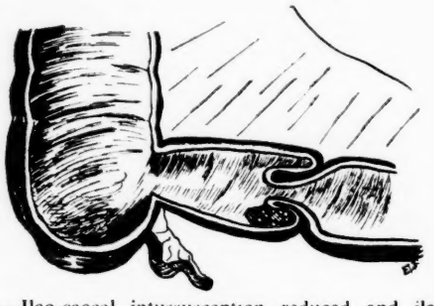

FIG. 3.—Ileo-caecal intussusception reduced and ileal still unreduced.

FIG. 4.—Showing area of resected gangrenous ileum with end-to-end anastomosis and tube draining ileum.

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Reviews

CHILD PSYCHIATRY

A Survey of Child Psychiatry. Edited on behalf of the Child Guidance Council by R. G. Gordon, M.D., D.Sc., F.R.C.P.Ed. Contributed by Contemporary British Authorities. (Pp. 278; 2 tables. 10s. 6d. net.) London: Oxford University Press. 1939.

This survey of child psychiatry by various authors under the editorship of Dr. R. G. Gordon for the Child Guidance Council is made from a somewhat new angle. This is particularly seen in the editor's opening paper on the physiological approach to psychiatric problems. Realizing the trouble in psychiatry due to the exclusive attitude adopted alike by the philosopher and the scientist, he essays a correlation between the objective scientific outlook and the subject-matter of the book. Recent work on the electrical and chemical changes accompanying nervous action has made this more feasible. Moreover, he brings out very clearly that a psychoneurosis is much more likely to develop when the individual is beset on two sides at once—by an organ inferiority and by an emotional disturbance—whereas he could have withstood either separately. This thesis is sustained by the record of a number of convincing cases. Dr. Gordon's aim is to show that the medical man unversed in psychology need not feel that this approach is foreign to his accustomed physiological outlook, but will be enabled to appreciate the great significance of what is becoming very important—the study of psychosomatic disease. The profession is beginning to realize that such physical conditions, for instance, as asthma, peptic ulcer, diabetes, may often be due to deep-seated emotional conflict and distress. The physical and the psychical are two complementary aspects which operate in every patient. This theme is taken up and illustrated by Sir Arthur Hall on lethargic encephalitis, Dr. Winnicott on juvenile rheumatism, Dr. Tylor Fox on epilepsy, and Dr. Alan Moncrieff on biochemical and metabolic disturbances. Dr. Fox tells us that epileptic children do so much better in special schools because the child becomes a normal member of the community in which he lives. Since fits are taken as everyday occurrences, he no longer feels any social handicap, and improves correspondingly.

The second section deals with problems related to mental illness, to which Dr. Emanuel Miller contributes an interesting analysis of the origins of obsessional and compulsive states in childhood, while Dr. Paterson Brown gives an illuminating discussion of "the family neurosis." The third section treats of the sociological aspects. To some extent Dr. C. L. C. Burns's article on family maladjustments overlaps Dr. Paterson Brown's contribution, but it is instructive to see the same topic through different observers' eyes. Both emphasize how important and difficult is the guidance of the parents in the process of child guidance. A particularly valuable article is that on maladjustments at school by Dr. H. S. Bryan. As he says, "adjustment to school is the second great adjustment which a child is called upon to make in its progression from infancy to maturity." We wish we could think his paper would be studied by school masters, who really need such information more than medical men. Despite undoubted improvement in the handling of school children, there is still justice in his remark that "it is a curious thing that decent and kindly teachers, who would never dream of taunting a child about a physical deformity, nevertheless regard the imperfectly formed brain of a child as a fair target for abuse, witticism, and ridicule." Lord Gorell in his recent poems spoke of school days as "crowded solitude and a need of being brave," and such it is for some. Dr. R. F. Barbour continues the tale in his article on social maladjustment. The last section of the book deals with special syndromes.

It is interesting to note that all the writers (and we have only been able to mention a few) are in substantial agreement as to the genesis of psychoneuroses, delinquencies, obsessions, stammering, and lies. In point of fact these can all be summarized under Adler's main categories—organ inferiority on the physical side, and, on the psychical, difficulties in adaptation to society, occupation, and sex. The whole book forcibly illustrates the change in attitude towards the "problem child" that has characterized the post-war years, and will be found decidedly helpful alike by parents, school masters, and doctors.

THE HEART SOUNDS

The Heart Sounds in Normal and Pathological Conditions. By Oscar Orías, M.D., and E. Braun-Menendez. (Pp. 258; 127 figures. 15s. net.) London: Oxford University Press. 1939.

Comparatively little attention has been paid lately to heart sounds and murmurs, perhaps partly because it was thought that their significance in connexion with the functional condition of the heart was well enough understood, and partly because their investigation by methods of precision is not a simple matter. Now when most circulatory functions have been precisely studied the more complete application of exact methods to the audible manifestations of cardiac activity seems due.

Orías and Braun-Menendez have produced a monograph embodying the results of several years' work on the graphic registration of the heart sounds, which is a most valuable contribution to cardiology. While direct auscultation will never be supplanted by instrumental methods, its chief limitations are that the heart sounds are only just above the threshold of audibility and may be below it, and also that accurate timing with the unaided ear is impossible. The early chapters deal with the apparatus and technique for the registration of the heart sounds, and it is emphasized that a curve of reference must be recorded simultaneously, the best being the venous pulse optically recorded with Frank's segment capsule. The electrocardiogram is of no use for this purpose, as it does not give accurately the duration of systole or the time of events in diastole. Phonoelectrocardiograms show that there are normally four heart sounds, two occurring in diastole, one of which is due to the rapid filling of the ventricle and the other to auricular systole. It is pointed out that while a real splitting of the first or second sounds does occur, this impression is often given by an audible third or auricular sound. Turning to the sounds in pathological conditions, gallop rhythm (which provides important evidence of myocardial failure) is considered in a separate chapter. The dependence of this rhythm on the intensification of sounds normally produced in the heart is clearly described, as are certain conditions in which such intensification may have no prognostic significance. It is held that the classification of the gallop rhythms should be made according to the mechanism of production rather than by the timing of the extra sound, because the former cannot always be accurately deduced from the latter. The heart sounds in mitral stenosis and in heart-block and other abnormal rhythms are discussed in detail.

A POST-WAR DOCTOR

"G.P." The Experiences of a Post-war Doctor. By G. K. Rainow. (Pp. 264. 7s. 6d. net.) London: Blackie and Son. 1939.

One of the slightly cynical pieces of advice which the senior generation of practitioners has been accustomed to offer to the new entry is never in any circumstances to explain to patients the nature of their illnesses and the rationale of the treatment ordered. The grounds usually given have been that the explanations are certain to be misunderstood and misreported; and that what the patients need (and will pay heed to) are orders couched in mandatory terms to do this or to refrain from that. The author of the newest attempt to interpret medical science to the laity—who writes under the name of G. K. Rainow, a name not appearing in the current *Medical Register*—disagrees with this advice in his interesting and at times stimulating reminiscences entitled "*G.P.*" It is, no doubt, injudicious to lay down hard-and-fast rules when dealing with that incalculable variant, the human being; but it seems quite possible that Dr. Rainow will be wrong in this matter more often than he will be right unless he exercises great care both in his language and in his choice of those fit to profit by it.

According to his own story, he has been trained and has qualified since the last war, which might not be suspected when he is found to have been taught a method of reducing dislocated shoulders abandoned, in London at least, about forty years ago. His story begins with student days, and is told in an attractive style well adapted to a lay audience; the early chapters contain much that is interesting, brightly set down. But as he goes on he becomes more and more the ardent reformer, full of dogmatic ideas of what the medical profession should do to improve itself, and full, too, of reproof to the laity at large for their stupid attitude towards their medical attendants. He is of the opinion that surgery has now passed its zenith, an opinion held also by many eminent men just before the discoveries of Lister became known. He believes, quite mistakenly one hopes, that there is opposition among the older generation of doctors to the relief of labour pains by partial anaesthesia. He practises in a district where hospital administration is so mismanaged that cancer patients have to wait eight or ten weeks before they can be admitted for operative treatment—on internal evidence the locality would seem to be the North of England or the North Midlands; but the picture thus drawn is surely overcoloured? Surely, too, there must have been something odd about the supervision of the school of medicine where he was trained if its young alumni were, as he relates, all accustomed to the system of obtaining locumtenencies through a local firm of druggists: has Dr. Rainow never heard of the British Medical Bureau? And is he really, as it would seem, equally ignorant of the existence of the Medical Insurance Agency?

THE SOCIAL PROBLEM OF RHEUMATISM

Les Rhumatismes. Maladies Sociales. By R. J. Weissenbach and François Françon. (Pp. 206. 55 fr.) Paris: G. Doin. 1939.

Drs. Weissenbach and Françon have made a valuable contribution to the literature of the rheumatic diseases and to the social problem these present. They have approached the subject from a point of view which has not previously been taken up, except perhaps in the reports of the British Ministry of Health, published under the direction of Sir George Newman, to which the authors have freely referred. About half the volume is devoted to the subject of acute rheumatism and the remainder to the chronic forms. Aetiology is fully considered, especially from the sociological aspect; heredity, race, climate, class, habitation, employment, and similar factors are dealt with in detail, and observations made in many countries are laid under contribution. As a result important conclusions are drawn in the matter of prophylaxis and treatment. The incidence of cardiac complications and of chorea is dealt with similarly.

The serious financial effect upon insurance schemes of invalidity due to chronic rheumatic disease is illustrated by records from Sweden, Great Britain, France, and other countries. Physiotherapy is regarded as of great importance; the moral is pointed by quotation of the experience of the P.L.M. railway, which in 1928 sent to Aix-les-Bains for treatment forty-two of its employees. Before their "cure" the absence of these men from work represented the interest on 608,600 francs. Their treatment cost a total of 34,000 francs, and as a result the remaining incapacity represented the interest on a capital of 381,700 francs. The conclusion is drawn that an outlay of 34,000 francs resulted in a sum of 226,900 francs being liberated for other purposes. The lesson appears to be one which the approved societies of this country should note.

The book is full of valuable information and suggestions, and can be cordially recommended to all who are interested in medico-social problems.

DIATHERMY

Diathermy. Short-wave Therapy, Inductothermy, Epithermy. By William Beaumont, M.R.C.S., L.R.C.P. (Pp. 303; 106 figures. 10s. 6d. net.) London: H. K. Lewis. 1939.

In the full title of his book on diathermy Dr. William Beaumont includes the words "short-wave therapy," "inductothermy," and "epithermy," but in the early chapters he is careful to point out that these terms refer to treatment based on the same electrical principles but varying in degree and technique. It seems rather unfortunate that the term "epithermy" should have been introduced to replace the older "high frequency" or "effluve"; and, although its name indicates that it is a surface phenomenon, it does not accord with the clarity of the rest of the book to include it with the various methods of "through heating" described.

The early chapters, on the physical characters of the high-frequency current and the apparatus in which this is generated, are unusually easy to read and really do explain the principles involved with the minimum of technical terms. The illustrations are mainly in the form of line diagrams, but occasional photographs of actual pieces of apparatus help the reader to correlate theory with practice. The physiological basis of diathermy is referred to and a long chapter on technique follows. In this section the author shows his thorough practical knowledge of his subject by not despising to stress the fact that the comfort and peace of mind of the patient are at least as important for good results as the correct application of electrodes. This fact is brought out also in the chapter entitled "Risks and Dangers." This latter chapter ends with the trenchant remark: "It should be evident that the risks and dangers attending the application of diathermy are relative to the experience, knowledge, and carefulness of the operator."

The chapter devoted to epithermy begins by making it clear that this form of treatment is essentially unlike diathermy in that there is little, if any, "through-heating" effect, but points out that the current employed is also a high-frequency one. In practice this method is being

used less and less, and Dr. Beaumont is not enthusiastic about its application to disease. Short-wave diathermy is next described, and the arrangement of this section follows closely that of the preceding section on ordinary diathermy, thus making it easy for the reader to compare the two. Very little mention is made of surgical diathermy in either of these sections, as this is evidently considered to be outside the scope of the book, but a description of the Hopfinger method of treating acne pustuliforme with the diathermy needle would have added to the practical value of the book. Inductothermy and its applications are briefly described, and there is a useful glossary of terms, but a somewhat inadequate index.

This is a book that can be recommended as a useful general guide to the use of diathermy.

Notes on Books

DUVAL AND SCHATTENBERG'S *Textbook of Pathology* (Appleton-Century, 35s.) is a work on conventional lines in which repetition necessitated by a regional arrangement and the large amount of space occupied by illustrations leave not enough room for an adequate exposition of the elements of the subject. The introductory chapter on infection and immunity (in which fever is called "hyperpyrexia") is altogether too brief and superficial, and a cursory treatment of essentials is noticeable throughout the book. Important modern advances are often ignored; there is no reference, for example, to any of the recent work on essential hypertension, and so far from explaining the origins of pernicious anaemia as they have been understood now for nearly ten years, the authors actually attribute the achlorhydria in this disease to atrophy of the gastric mucosa caused by the poor blood supply. This is by no means the only positive misstatement of fact, and less serious errors of omission, of implication, and of spelling are unduly frequent. The allocation of space to subjects is sometimes unusual; that leprosy should get ten pages is doubtless owing to one of the authors' interest in the disease, but the whole of the pathology of the stomach surely deserves more than five pages and pneumonoconiosis more than twenty-four lines. Some of this disproportion is attributable to differences in the nature and frequency of disease as seen in New Orleans.

The Dream World, by R. L. MÉGROZ, is published by John Lane at 10s. 6d. It is difficult to see how this book can be of any real use or interest to medical practitioners, since it makes no claim to a scientific criticism of dream material. It is a survey of the dream in literature, with numerous examples of narratives of dreams by famous writers, including prophetic and telepathic material the reliability of which is not criticized.

The second edition of *Gardening in East Africa*, revised and enlarged by the addition of half a dozen chapters, and furnished with ten very excellent coloured plates illustrating fifty-five of the flowering plants native in East Africa, is a thoroughly practical work for the use of the working gardener. Following a foreword by Sir Arthur Hill, Director of the Royal Botanic Gardens at Kew, are chapters on the climate of East Africa, the soil, and the factors of plant growth, manuring and tillage, plant propagation, and elementary horticulture, that serve admirably to introduce the gardener to the theoretical side of his work. Other chapters dealing with garden planning, annuals, perennials, climbing plants, vegetables, the details of gardening in Uganda and Tanganyika Territory, and so on, give a full account of the practical side of gardening in different parts of East Africa and at different altitudes above sea level. The book is well written, concise, yet full of information, and covers a great deal of ground; it may be recommended to gardeners in other subtropical countries besides East Africa, such as parts of India, Ceylon, Australia, and the Western States of North America. It has a full index, and has been excellently turned out by the publishers. A special word of praise must be given to both the artist and the printers of the coloured plates, which are of quite unusual merit and attractiveness. The editor, Dr. A. J. Jex-Blake, has deserved well of his fellow gardeners. The publishers are Longmans, Green and Co., and the price is 12s. 6d.

Preparations and Appliances

ELECTRO-ENCEPHALOGRAPHIC APPARATUS

We are informed that the Edison Swan Electric Company, Ltd., are now undertaking the manufacture of electro-encephalographic apparatus to the specification of Mr. W. Grey Walter. The latest model is being exhibited at the Radio Exhibition, Olympia, this year from August 23 to September 2, and embodies various improvements and refinements which should make it possible for anyone with a sound knowledge of electrophysiology to obtain as good results as those reported by Walter and his colleagues in this country.

The apparatus consists of three identical amplifiers mounted in robust rack-work on trolley wheels. Each amplifier gives an amplification of the order of five millionfold over the range of frequencies important in electrophysiology—that is, from 1 cycle per second up to several thousand cycles per second. As recorders, the cathode-ray tubes are standard and are arranged for simultaneous obervation and photography, a specially slow time base unit and a long after-glow screen making the former particularly helpful in diagnosis. As an alternative, imported ink-recording apparatus of the American type can be provided, together with suitable power amplifiers. The special feature of the equipment is that it is suitable not only for electro-encephalography but also for any electrophysiological purpose—for example, a simultaneous record can be made of three leads of the electrocardiogram, or one amplifier can be used for the electrocardiogram, one for the electro-encephalogram, and one for recording muscle or nerve action potentials, respirations, heart sounds, movements, speech, or any other phenomenon that can be translated into changes of electrical potential. The sensitivity of the amplifiers is such that a few microvolts are easily measurable, and particular attention has been paid to absence of background noise and to immunity to extraneous interference. In most situations no screening is necessary for the patient, and the apparatus can be used in any room where electric power is available.

Special models can be made for routine testing or where portability is desirable. The price of the standard research model is about £250, complete with electro-encephalogram electrodes and camera. Accessories for recording other phenomena are also available.

FIRST-AID DRESSING

Dr. A. C. GREENE (Weybridge) writes:

A novel field or first-aid dressing has come to my notice. It complies with the Army requirements in all particulars. Self-application with one hand is made possible by a special buttonhole device through which the short end is passed to form a loop or "hitch" to hold the pad firmly in place, which results in a firm, non-slipping wound dressing. The special cotton pad is composed of three cottons laminated and "carded" in one piece, and sandwiched in a double layer of gauze, stitched to a "fast-edge" bandage of considerable strength. For the training of personnel (A.R.P., etc.) it is produced in a non-medicated, non-sterilized form for economy, and the price is just over fourpence per dressing, packed in paper, and slightly more in Service form. It is made by Ellangee Proprietary, of 4, Bryanston Street, London, W.1.

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CLINICAL ELECTRO-ENCEPHALOGRAPHY

Interest in electro-encephalography increases steadily, and there is now no single nervous disorder which has not been studied by its means. A complete review of progress in this field would consist of a recital of comparatively obscure and otherwise unrelated neurological problems. Nevertheless, in subjects of special interest to clinicians progress has been rapid and reassuring, though by the law of diminishing returns the more recent advances are less dramatic than the earlier ones. Three years ago Walter described how cerebral tumours could be located by electro-encephalography, but until recently the continuation of his work at the Maida Vale Hospital was the only sign that the method was of real practical value. In the last few months, however, complete and systematic confirmation of his claims has come from several independent sources. Gibbs and Williams,[1] working in Boston with Walter's method of location (by observing the phase relations of the abnormal "delta waves" proceeding from the neighbourhood of the expanding lesion), have shown in a series of over one hundred cases that the site of a cerebral neoplasm can be located with as great a degree of accuracy as by any other method, and without particular reliance on the co-operation and courage of the patients. The only difference between Walter's technique and that of Gibbs and Williams was that the latter used ink-writing oscillographs instead of cathode-ray tubes for recording the abnormal electrical rhythms. Direct recording instruments of this type have undeniable advantages over those that need photography, particularly when immediate or continuous records are required; but, as Bertrand, Delay, and Guillain[2] aver in their monograph on electro-encephalography, the cathode-ray oscillograph is probably the instrument of the future, since the popularization of television is certain to cheapen and perfect it. In the intermediate film system of television a time of less than one minute elapses between the exposure of the film and the presentation of the dry record, and there is no reason why a similar speed should not be achieved in clinical application, should it be desirable. Ink-writing instruments are likely to remain comparatively expensive, since their use is limited to a very specialized field.

More recently still Krynauw[3] at the Nuffield Institute, using equipment designed by Walter and following his methods, has completed a survey of over one hundred cases of cerebral tumour. He finds that not only can the site of the lesion be determined with exactitude sufficient in some cases to dispense with air replacement but also the nature of the growth can to some extent be inferred from the appearance of the record. A very slow discharge suggests greater malignancy than a relatively fast one, a phenomenon previously described by Walter,[4] who also admitted what Krynauw has found—that certain slow-growing tumours of the astrocytomatous type appear to produce no abnormal discharge in the surrounding cortex. The work of Krynauw not only confirms the earlier findings; it also shows that the technique, though more difficult than many, is straightforward enough to yield good results in the hands of one with other even more exacting duties in a busy neurological clinic, provided that he possesses sound knowledge of electrical theory and some experience of applied electrophysiology. As Walter was careful to point out, electro-encephalography should never be regarded as a substitute for the older methods of diagnosis, unless the condition of the patient makes neurological examination or air replacement impossible. From the point of view both of the patient and the collection of scientific information, each case should be studied from every aspect.

The other condition in the diagnosis of which great claims have been made for electro-encephalography is, of course, epilepsy. The discoveries of Lennox and his colleagues in Boston concerning the nature of the epileptic attack itself may now be regarded as classical, though the suggestion of these workers that epilepsy is "a paroxysmal cerebral dysrhythmia" should in the light of other observations be treated with some reserve. From the bio-electric point of view the abnormal discharges associated with the epilepsies would seem to be neither paroxysmal nor cerebral nor a dysrhythmia. As Golla, Graham, and Walter showed—and this too has now been confirmed by such workers as Pagniez, Liberson, and Plichet,[5] Jasper and Hawke,[6] Bertrand, Delay, and Guillain,[2] Krynauw[3]—a large proportion of idiopathic epileptics show a continuous, sometimes strictly focal, delta discharge. It is rarely found in patients above the age of 40, though it can be detected in children with behaviour disturbances before there have been any proper fits. It bears little

[1] *Arch. Neurol. Psychiat.*, Chicago, 1939, **41**, 519.
[2] *L'électro-encéphalogramme*, Paris, 1939.
[3] *British Medical Journal*, 1939, **2**, 160.
[4] *J. Neurol. Psychiat.*, 1938, **1**, 359.
[5] *C. r. soc. Biol.*, Paris, 1938, **128**, 1084.
[6] *Arch. Neurol. Psychiat.*, Chicago, 1938, **39**, 885.

relation to the aura or nature of the attack in *grand mal*, although it is correlated to some extent with the symptoms in *petit mal*. It is not abolished by the excision of the cortical area apparently responsible for it (unpublished observations of Golla, McKissock, and Walter). These observations, taken with those of Walter, Nevin, and Griffiths[7] on a case of hypothalamic tumour, and Grinker[8] and Hoagland, Himwich, Campbell, Fazekas, and Hadidian[9] on the electrical activity and the responses to stimulation of the hypothalamus in animals and man, suggest that, though the cortex certainly exhibits a slow delta discharge when compressed by an external agency such as a cerebral tumour, it can also produce very similar electrical phenomena when the nature of the interference is more subtle. Grinker's observations, though made by a somewhat drastic method, are of the greatest importance. He inserted a partly insulated silver-plated steel electrode up the nose in conscious human subjects and pushed it through the mucous membrane until " a crunching sound is heard." In this position the electrode is as near to the hypothalamus as the scalp electrodes are to the cortex. Grinker claims that so far there has been neither pain nor sepsis, but his experiments are unlikely to be repeated very often in this country. He finds that with this lead the cortical potentials can be picked up to some extent, but larger than these are apparently specific hypothalamic waves at 4 to 5 per second and a smaller discharge at 13 per second. That electrical communication has actually been established with the hypothalamus seems certain from the effects of stimulation with this electrode position. Complex powerful emotional states were produced, always associated with fear rather than the rage seen in animals with a similar procedure, and at the same time profound electrical disturbances were seen in the cortex resembling those found in the resting hypothalamus. These effects, and the even more dramatic results of pharmacological and emotional stimulation, are too complex to be adequately summarized here, but there seems no doubt that the diencephalic structures influence the higher centres not only through the autonomic system but directly, and it is probable that the relative electrical accessibility of the cortex has led us to assume too readily its paramount importance in the physiopathology of certain nervous disorders. Still, whatever their true origin, the existence of characteristic electrical abnormalities in the epileptic cortex is now firmly established and their detection by electro-encephalography is a great practical aid to diagnosis.

[7] *British Medical Journal*, 1939, **1**, 107.
[8] *Psychosom. med.* 1939, **1**, 19.
[9] *J. Neurophysiol.*, 1939, **2**, 276.

PROGRESS OF THE BLOOD TESTS BILL

The Bastardy (Blood Tests) Bill, introduced in the House of Lords by Lord Merthyr, was given a second reading on February 8 and ordered to be sent to a Select Committee. This procedure is quite often followed with private members' Bills which introduce novel proposals, and was clearly appropriate to this Bill. The promoters welcomed it, for it would ensure that the question of blood-group evidence in paternity cases was examined for the first time in this country by an official tribunal of high competence. The Select Committee of the House of Lords, under the chairmanship of Lord Strathcona and Mount Royal, reported on August 18, and its report[1] contains an outspoken confirmation of the evidential value that has been claimed for blood-group tests, and an almost complete agreement with the principles of the Bill. It has amended and expanded the Bill, and recommends that it should be passed into law.

The committee was satisfied that the risk of error in the making of blood tests has been reduced to negligible proportions, and that the tests not only might but would prevent injustice. It was much impressed by the preponderance of legal and medical opinion in favour of the use of blood tests in evidence, and by the unanimously favourable testimony of the eminent pathologists who appeared before it: Professor J. H. Dible, Dr. G. L. Taylor, Dr. G. Roche Lynch, Dr. S. C. Dyke, Dr. David Harley, and Dr. J. C. Thomas. The question arose upon what legal basis the courts should be required to deal with blood tests. The committee concluded that where the defendant demands a test the court should be obliged to order it, but that in all other cases the court should have discretion to order a test if they see fit. If the woman refuses to undergo a test her application should be dismissed. This provision is vital to the success of the Bill, as the committee recognized, but it had to consider whether there are any circumstances in which an affiliation order should be made notwithstanding the refusal of the applicant—in particular, the very exceptional cases in which the taking of blood might be detrimental to the health of either of the parties or of the child. Seeing, however, that the responsibility of taking the samples would invariably rest with a qualified medical practitioner, the committee concluded that no cognizance need be taken of such cases, and that dismissal of the application should always follow a refusal to undergo the test.

Considering the novelty of some of the proposals in the Bill, the criticism directed against it was not very heavy. The committee noted that the testimony of two out of the three critics was not directed

[1] 173. London: H.M. Stationery Office. (2d.)

against the validity of blood tests as evidence, and was largely irrelevant to the purposes of the Bill. None of the critics objected to the general principle of blood tests. The most substantial objection was that as affiliation cases are civil proceedings the ordering of a blood test is an interference with the liberty of the subject, and a mother might well shrink from the test both for herself and her child. The committee was fully aware that these are technically civil cases, but felt that in view of their social repercussions and the possible injury to reputation which they involve they require special treatment. It was also of the opinion that new knowledge should be brought to the service of justice in all its relations. In the words of the Home Office memorandum issued a few years ago, "If it is possible to secure that the tests can be carried out under conditions which would admit of no doubt as to the validity of the results obtained by them, it does not seem that too much weight should be attached to this objection." Mr. Claud Mullins criticized the Bill on the grounds that it would introduce inconsistency into the present law, that it would not work in practice owing to the poverty of most of the persons concerned, and that scientific evidence is unnecessary in these cases, because intercourse at the material time should render a man liable to pay. The committee remarked that his evidence was based on the assumption that "the man who may be the father must pay," whether he is in fact the father or not, and that the bastardy law of this country is unfairly weighted against the woman. These considerations, it says, are outside the scope of the Bill, and it considers that, even in the absence of such wholesale changes in the law as Mr. Mullins advocates, the application of blood tests as a means of excluding the possibility of paternity can be usefully introduced into our existing system of law. Two witnesses who represented the National Council for the Unmarried Mother and her Child maintained that science was not yet sufficiently advanced to justify the use of the tests in this country. The committee, on the other hand, after critically considering the evidence of the pathologists, saw no alternative to accepting the conclusion that blood tests carried out by approved experts would render reliable and valuable assistance to the courts.

One of the greatest difficulties of the Bill is that of expense, and the Bill proposes that the court should have discretion to order that the costs of the tests and, where this is necessary, of the attendance of the pathologist to give evidence, should be paid out of the "local funds." These are funds of counties and county boroughs set up under the Costs in Criminal Cases Act, 1908, to pay for the defence of poor persons charged with crime. The county councils strongly object to the proposal that they should pay for blood tests. The committee found that the balance of opinion was, however, in favour of the charge being imposed on the local funds, and completely agreed with this view. Comparing the statistics supplied by the Home Office and the probable cost of blood tests, it found that the probable cost would be insignificant compared with the large funds handled by local authorities. It decided that the report of a blood test should be sufficient evidence of the facts shown thereby unless the approved person making it attends the court. In other words, there will be no need to call the pathologist to give oral evidence of his findings, but if he appears he is liable to cross-examination like any other witness. This is one of the main provisions of the Bill. The working of the Bill will depend on the composition and procedure of an expert advisory body to be set up by the Lord Chancellor, and upon the observance of an intricate code of rules. The committee recommends the adoption of a proposal for a Blood Tests Board, consisting of legal and medical representatives in equal numbers, to be nominated by various professional bodies, including the Royal Colleges. The draft rules provide for the approval, on the recommendation of the Board, of blood-testing centres, and the committee recommends that there should be two of these at first, and that they should be increased to four if necessary. The "approved person" nominated by the court to make the tests should be a registered medical practitioner who is also a pathologist. Provision should be made for blood samples to be taken by a registered medical practitioner, who would not necessarily be an approved person, but would, if possible, be the woman's regular medical attendant. The committee was satisfied that a single test is enough, and that the "approved person" should not be compelled to submit his test to another pathologist for confirmation.

The Select Committee of the House of Lords has therefore, while preserving all the essential features of the original Bill, improved it by the addition of a number of useful procedural directions. Its report should be of assistance to the Bill on the arduous journey which it has yet to make to the Statute Book, and even if the Bill should never arrive there this is a valuable and unique contribution to the literature of medico-legal blood grouping.

MOTILITY OF THE FALLOPIAN TUBE

The obscurities of experimental biology emerge from time to time as clinical problems of the first interest, and nowhere is this better illustrated than in the work on the motility of the female generative organs. The spontaneous movements of the uterus and tubes have

been studied extensively in animals by Reynolds[1] and his associates, but it is only comparatively recently that the valuable data so compiled have been applied to the similar motor activity of the human genitalia. The work of Moir[2] in this field resulted in the discovery of ergometrine, and increasing knowledge of the motor reactions to the administration of various hormone preparations is providing a more scientific standard for their clinical application than has hitherto been available. Apart, however, from the purely therapeutic standpoint, variations in motility in different conditions are of much physiological interest. Dickinson,[3] for example, has shown how the spontaneous activity of the uterus varies at different phases of the menstrual period, and Rubin[4] and Bender[5] have lately been able to demonstrate by indirect kymography that the degree of motility of the Fallopian tubes is subject to the serum hormone concentration. This is itself determined by the time of ovulation, so that it seems reasonable to suggest that the latter may be calculated from the former. There is here no accurate index of comparison with animals, so that hitherto the only proof of ovulation has been by the recovery of ova from the Fallopian tube or by direct observation of the formation of the corpus luteum. Both procedures are, of course, untenable in that they involve laparotomy. The indirect methods of endometrial biopsy and serum hormone determination are too tedious and uncertain to be of real value, and it appears that Rubin's kymographic technique has here one of its most useful applications. The determination of the exact time of ovulation is important from many clinical aspects, for apart from its value in the calculation of the so-called "safe" period it appears to have potentialities in the diagnosis of anovular menstruation and as a basis for the more scientific application of hormone therapy and the more rational treatment of many menstrual irregularities.

COMPULSORY MEASURES FOR VENEREAL DISEASE

The report of the Commission on Venereal Disease sent to Scandinavia and Holland in July, 1937, has recently been strongly criticized by A. W. Towne,[6] who is much in favour of compulsory methods. Few people will disagree with the main desiderata of a campaign against venereal disease—such as adequate facilities for diagnosis and treatment, a maximum of privacy for patients, education of the public, and the tracing of the sources of infection and contacts by means of social service workers. But when it comes to notification and compulsory treatment opinion is sharply divided. Towne holds, contrary to the findings of the Commission, that compulsory measures are the main cause of the very great decline in syphilis in the Scandinavian countries, claiming that the downward trend has been much greater in these countries than in Great Britain, where only voluntary methods are employed, and he does not attach much importance to the incidence rate. He also considers that the fall in gonorrhoea has been greater under the compulsory system than in Great Britain, but does not explain why the incidence under the former is two to three times as great as in the latter. Unfortunately figures are not available over a long enough period for an accurate comparison of the trend of the fall of the syphilis rate in those countries employing compulsory with those employing only voluntary methods, but as regards incidence England and Holland compare favourably with Norway, Sweden, and Denmark, especially when conditions such as density of population favour a much higher rate in the two former—a point which Towne seems to have overlooked. The question at issue is, Would compulsory methods work? Would the private practitioner and consultant notify all their cases just as the clinics would do? And would not notification deter a considerable proportion of patients, through fear of exposure, from seeking adequate treatment? To say that notification of tuberculosis works well is beside the point, since the average person is not ashamed of tuberculosis in the same way as he is of venereal disease; and if notification is going to be incomplete it is of little value for statistical purposes; even in Denmark there is evidence that notification is far from complete. Compulsory treatment opens up even greater difficulties. A patient cannot be compelled to have treatment if he cannot be got hold of; and if he gives a false address how can he be found? Even if the compulsory system works well in Scandinavia it does not follow that it would do so in Great Britain, and Towne shows a striking ignorance of the psychology of the people of this country if he thinks that the average patient with venereal disease is going to submit readily to forcible treatment of which he does not approve. Few will deny that notification and, if necessary, compulsory treatment are ideal if they can be enforced; but the majority of people, medical and lay, in this country consider that such measures would not be workable at the present time and that public opinion needs much more education before they could be introduced with any hope of success. To abolish the voluntary system and introduce compulsion before public opinion is ripe for it would be to run the risk of a big setback.

ELECTROCARDIOGRAPH IN VITAMIN B_1 DEFICIENCY

Cases presenting symptoms of heart failure which can be rapidly relieved by administration of vitamin B_1 have been reported by American authors, most of the patients being chronic alcoholics. When oedema of the legs and a palpable liver are found in a person known to be an addict to alcohol, B_1 avitaminosis should be considered in the differential diagnosis as well as cirrhosis of the liver and heart failure from coronary disease and hypertension. Electrocardiographs in vitamin B_1 deficiency have shown various

[1] *Physiol. Rev.*, 1937, **17**, 304.
[2] *Trans. Edin. Obstet. Soc.*, 1933, **54**, 93.
[3] *Human Sex Anatomy*, 1933, Baillière, Tindall and Cox, London.
[4] *Amer. J. Obstet. Gynec.*, 1939, **37**, 394.
[5] *Archiv. Gynäk.*, 1939, **168**, 545.
[6] *Amer. J. Syph. Gon.*, 1939, **23**, 348.

abnormalities in rate, rhythm, and in the form of the waves, including alterations in the RS—T segment and in the T wave. According to C. C. Dustin, H. Weyler, and C. P. Roberts,[1] the changes in the T wave may simulate the appearances which follow cardiac infarction. They record cases of six male patients, aged 34 to 50, all of whom gave a history of chronic alcoholism and deficient diet, and presented cardiovascular symptoms; dyspnoea, oedema, and simple tachycardia being predominant. Rheumatic, syphilitic, and (except in two cases) hypertensive heart disease and anaemia appeared to be excluded as causes of the symptoms. The electrocardiographs showed waves of low voltage, flattening of the T wave, increase in the Q—T interval, and moderate sinus tachycardia. Inversion of the T wave in Leads I and II was observed in some cases, and might attain such a depth and shape as to suggest cardiac infarction, except that there was the tendency for the changes in the apical chest lead to be relatively less than in the limb leads, and deviations of the RS—T segment were in this series slight or absent. As in cardiac infarction, the T-wave changes developed progressively as the patient recovered, but both the progression and regression of these changes took place over relatively short periods of time. The patients improved rapidly with rest, balanced diet, and vitamin B_1 (10 mg. daily), and were discharged after an average period of twenty-one days. Although in one or two of the cases reported by Dustin the possibility of hypertension and coronary disease being partly responsible for the symptoms does not seem entirely excluded, the symptoms and cardiographic changes in the majority appear attributable to B_1 avitaminosis.

EPITUBERCULOSIS

Epituberculosis may be defined as a chronic illness in children characterized clinically by indefinite physical signs in the chest and radiologically by a homogeneous opacity extending from the hilar region into part or the whole of a lobe. A history of contact with an open case of pulmonary tuberculosis is usually obtained, and recovery with gradual disappearance of the opacity after some months is the rule. The aetiology of the condition is still uncertain and morbid anatomical evidence is scarce. Regression of the lesion is essential for the establishment of the diagnosis, and so material for investigation can be obtained only from patients who die from causes other than the epituberculosis during the stage of regression. Necropsies on three such cases have been described by Fish and Pagel.[2] In each case examination of the lungs revealed a wedge-shaped area surrounding a caseous Ghon focus which forked into two branches of the bronchus to the left upper lobe. This area consisted of collapsed alveoli and numerous tuberculoid granulomata with Langhans's giant cells, which were confined to the wedge-shaped area and were not found elsewhere in the body. There was no caseation and no tubercle bacilli in this lesion. It is concluded that epituberculosis should be considered a genuine tuberculous reaction of the "non-caseating tuberculosis" type. There is ample experimental evidence that the granulomata and giant cells indicate an antigen-antibody reaction with successful fixation and destruction of the antigen. In epituberculosis the antigen is probably represented by a few living or dead bacilli, which enter the allergic tissue when a primary focus gains access to the bronchial system by eruption or extension into adjacent bronchi. The whole phenomenon can therefore be interpreted as a tuberculin reaction of the lung tissue, since at the site of a tuberculin reaction in the skin the same histological changes are seen. Regression of the lesion is due to neutralization of the antigen. In the cases described by Fish and Pagel blockage of the bronchus also caused atelectasis, but a tuberculo-allergic tissue response and atelectasis may occur independently and each form the basis of a transient shadow in the radiograph. Clinically it is not possible to differentiate between these two causes, but it should be emphasized that atelectasis alone does not explain all, or even most, of the cases clinically diagnosed as epituberculosis.

[1] *New Engl. J. Med.*, 1939, **220**, 15.
[2] *J. Path. Bact.*, 1938, **47**, 593.

THE EDUCATIONAL NUMBER, 1939

The *British Medical Journal* dated September 2, 1939, will be the annual Educational Number. Its contents will include the usual full account of the requirements of the General Medical Council and of the universities and other licensing bodies in Great Britain and Ireland, as well as information about the opportunities offered by the various medical schools and other teaching institutions and the fees they charge. The details given have been revised and brought up to date by the authorities concerned. These sections, the object of which is to furnish a handy guide to intending students of medicine, are supplemented by articles for newly qualified practitioners on such matters as postgraduation study (with special reference to the British Postgraduate School at Hammersmith), the public medical services at home and abroad, tropical medicine, psychological medicine, and the special diplomas. The opening article for our forthcoming Educational Number, written by Professor W. Fletcher Shaw, P.R.C.O.G., is entitled "Education in Obstetrics for General Practice."

Delegates from all parts of Scotland are being invited to attend a conference, dealing with nutrition and education, which is to be held at the British Medical Association Rooms, Edinburgh, on Saturday, October 14, under the auspices of the Scottish Committee against Malnutrition. There will be an afternoon and evening session, and Sir John Boyd Orr, Director of the Rowett Research Institute, Aberdeen, will be one of the speakers. It is expected that about forty organizations will be represented at the conference. The afternoon session will be devoted to discussing "Existing Nutritional Conditions as Compared with Minimum Health Requirements," while the evening session will deal with "Malnutrition as it Affects Education." Further information can be obtained from the honorary secretary, Dr. Mary Hooper, 111, Trinity Road, Edinburgh.

WAR WOUNDS AND AIR RAID CASUALTIES

The following article is a supplement to the series of lectures on war wounds and air raid casualties printed in these columns

THE MENTAL ASPECTS OF A.R.P.

BY

JOHN RICKMAN, M.D.

The mental aspects of A.R.P. are important, because if there is panic or "loss of nerve" all other A.R.P. will be unavailing. The more general aspect will be stated here.

Modern warfare is waged on two fronts—military and civilian (Langdon-Davies, 1938). On the military front men must, in the face of death, work like parts of a machine; their emotional life must be centred on their regiment, and their every action must be shaped to continue the activity of that well-recognized group of fellow-men. If this loyalty is enough to prevent demoralization the task of the attack is to pound the men themselves to bits physically. On the civilian front, on the other hand, the task of both the attack and the defence is different. The civilian population is not organized into regiments which, by special training and tradition, claim and inspire the self-forgetful devotion of individuals. Group-feeling is divided between the family, workmates, and to a varying extent the nation itself (represented by the King and by political and social institutions). Further, the kind of response required of the civilian population is different from that required in the Army. "Business as usual," "Keep the home fires burning," are war-time slogans which have an important military significance, standing for the normality of life for which the struggle is being waged. The task of the attack is to disorganize the morale of the civilian population of the enemy, a thing which can be achieved by arousing so much nervous apprehension that the slogan "Safety first" will be spontaneously in everybody's mind. The object of the attack must be to make the population give up trying to live a normal life or thinking of a normal day's work: the weapon is fear. For the defence to be effective the population must feel that they are being well and resolutely led, that their liberties are being protected, and that protection from danger for individuals is fairly distributed.

Panic

The term "panic" is used loosely to describe a number of conditions; it may be defined as a condition in which the individual experiences the highest degree of dread, in which his social ties are temporarily severed to a greater or less degree, and in which he loses self-control. The degree of actual danger is not the sole causal factor; indeed, no one factor causes it. A predisposition to nervous states plays a large part; there is something in the mind of the predisposed which goes out to meet the danger half-way, and thus in the imagination reinforces it. In dealing with panic the difficulty is to control the imaginative or phantasy element, which is influenced by the unconscious part of the mind.

The anxiety conditions associated with acute war danger found in normal people may be divided into four stages:

1. *The prodromal symptoms* lasting from a matter of seconds to hours or longer, characterized by the feeling that one will not be able to maintain self-control much longer. If the danger goes off, or if "moral reinforcements" turn up, this may end the manifest trouble.

2. *The acute stage*, characterized by motor overactivity (occasionally paralysis) of the voluntary or involuntary muscular systems, more rarely by stupor or a wish to sleep. During this stage the person may still be accessible to "moral reinforcement," the power of response to leadership is not lost, and the answer to command may be prompt. It should never be assumed that because a person looks "jittery" nothing can be done to steady him. Failing such reinforcement this is the stage where individuals scatter, break formation, and run from their friends and duty.

3. *The chronic stage*, in which there is diminution of motor activity and return of sphincter control, but appetite is disturbed and there is insomnia. Above all, the return of "social sense" is slow, the response to command is feeble or lacking, and the individual has lost his sense of belonging to a group.

4. *The stage of resolution* consists in a resumption of social contact, response to command, realization of responsibility, and return of self-respect. To repeat: it must not be assumed that because a person is "all jittery" nothing can be done for him: his need of help is obvious, and in many cases can be effectively met.

The effects of high explosive fortunately do not bring fundamentally new problems for the psychologist to deal with; the aetiology of this kind of neurosis is basically the same as that of the more familiar peace-time varieties (Jones, 1918). The strain of war conditions leads to the reactivation of latent neurotic conflicts which originate in infancy, and since these are literally unconscious the subject is unprepared for them and cannot control himself when faced with what is to him an intolerable danger. The aetiology and prophylaxis of panic has been discussed at some length elsewhere (Rickman, 1938), but something more must be said of the part played by "moral reinforcements" in overcoming an attack of "nerves."

Effect of "Moral Reinforcements"

Though an anxiety attack in adult life may be precipitated by a present danger, the character it takes will depend not so much on the nature of the danger as on the individual's own mental make-up, which in turn is based on the way in which he managed to overcome his anxieties at a time before his character became consolidated—namely, in infancy. As an emergency therapeutic technique we may employ in the case of the adult those measures which were effective in overcoming the early anxiety attacks. What were the "moral reinforcements" then used? Three main ones may be singled out: (*a*) manipulative activities; (*b*) work for others; and (*c*) membership of a group.

The performance of purposeful acts ("manipulative activities;" Rivers, 1920) helps the individual to get command of his "nerves" and to allay his fears. The military objective of returning a man or woman to duty has therefore a therapeutic value if the individual's mental co-operation can be obtained. This co-operation is best achieved if the person can be got to feel that he is doing something for those with whom he has close ties—that is, he can "make good" damage done in phantasy under the influence of aggressive impulses. It must be re-

membered that panic, and anxiety states generally, are a mixture of apprehension on account of *external* danger, and of anxiety and guilt on account of *internal* unsocial and egoistic impulses—that is to say, there is a mental conflict in the unconscious part of the mind in which both tender and hostile thoughts directed to the same person are trying to find outlet. This conflict produces guilt as well as anxiety, and for a proper understanding of the anxiety reaction the guilt element must be appreciated as well as the influence of the external danger. It is the guilt component which makes the return of the individual to his place in the group a difficult step. (On the other hand, Authority, for its part, must show leadership and capacity to realize the needs of the people, mental as well as physical: to *govern*—that is, to keep order and dispense justice fairly; and to *protect*—that is, supply essential needs of physical and sanitary protection and provide food and distribute all impartially.)

The Social Need

These considerations have practical bearings. The individual must be regarded not only as being a neurological entity, so to speak, but also a human creature with a strong social need. His dependence on the good will of his fellows and his need to give help to them are as much a part of his mental make-up as his upright posture and developed cortex are of his physical make-up.

The strain of war conditions in the direction of disturbing morale will affect a small proportion of civilian population seriously and a larger proportion subliminally. The aggressive impulses, inevitably mobilized, do not find adequate and immediate outlet, and the individual when dealing with the increased mental tension dreads unconsciously that he will become aggressive to his friends instead of his foes. He does not in these circumstances trust himself with his friends, and therefore his social bonds and his self-confidence are impaired.

Restoration of Self-confidence

The handling of the individual in the early stages of panic, and indeed the whole question of morale in a group if one of its members "gives way," turns upon the "moral reinforcements" which can be mobilized. In an emergency the question is, What short cut can be taken to restore self-confidence? The physician cannot, of course, rely on the patient being reasonable any more than a child in a fit of terror can be reasoned with, so he must deal with the irrational apprehensions which rob the patient of his self-possession. To deal with such a situation the physician should try to discover or guess what sort of thing the patient is anxious about, rather than to discourse to him about what he should do or think. Diagnosis and subsequent handling depend in a large measure on making the right guess as to the nature of the anxieties at the back of the patient's mind. Just as a child in these circumstances needs assurance, so does a panic-stricken adult; the patient desires something to make the fear less, and, speaking generally, that something is a person who will seem to the patient to be stronger than the horrors which haunt him. It is not a case of making the patient invulnerable to external danger. (Physical protection is a help, but to be effective must be recognized as such: fears often blur the judgment badly even on this point.) The important anti-panic measure (other than providing for physical security and an adequate outlet for the aggressive and constructive impulses of the population—which, after all, is the duty of the Government) is to eliminate fears of "internal danger," or going mad, or of running amuck, and to do this the helper must appear in the patient's phantasy as a steady and kindly parent figure, a reassuring representative of a good or respected authority.

The Doctor as a "Moral Reinforcement"

The doctor, in virtue of the role he is assigned in his patient's phantasy (as well as because of his actions), is fitted to play the part of a "moral reinforcement" to distracted people; but if the profession is going to take responsibility for the quieting of emotional crises it is desirable that those who are interested in this should prepare themselves in advance for this trying duty. Every qualified man knows when he is called to accident what to put in his bag, or when he gets to the scene what he can do in the way of first aid. First-aid posts are being established for physical injuries and are being equipped with appliances that experience has shown to be necessary. First aid in psychotherapy does not require much in the way of outfit, but calls for every bit as much training of personnel and as much foresight in administration. The knowledge that such provision is being arranged would itself be a reassurance. To give only one instance of the reassuring nature of medical knowledge, it is important for doctors to know that the last war did not in fact increase the amount of insanity in the community, or in the Army. If people say that the war danger will drive men mad they can be told with truth that generally it does not have such effects. In this work the medical profession will co-operate with the police (allies experienced in dealing with a distracted populace) and also with the air wardens. These enthusiastic but generally less experienced men will need the help of doctors, who will sooner or later have to take over responsibility for teaching the psychological as well as the physical first aid.

Summary

The mental aspects of A.R.P. cover a wide field—namely, the morale of the population and the reasons for the breakdown of morale in the individual. The progress made in the field of mental pathology since the last war should enable us, by a deeper understanding of the role of anxiety and guilt in the mental make-up of the normal as well as the neurotic subject, to see in advance better than formerly where trouble will arise, and how to meet it. The medical profession should take seriously the responsibility for training themselves and auxiliary personnel in the handling of anxiety or panic cases, and should not delay in beginning preparations.

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A leaflet of instructions for the correct application of the Schafer method of artificial respiration has been issued by the Royal Life Saving Society, from the offices of which society, 8, Bayley Street, Bedford Square, W.C.1, it may be obtained free of charge. Envelopes should be marked "Artificial Respiration." These instructions are taken from the actual manuscript (1931) of the late Sir Edward Sharpey Schafer, F.R.S., which was specially written for, and is still in the possession of, the Royal Life Saving Society. The instructions have been adopted by the St. John Ambulance Association, and it is announced that any tuition in this method of artificial respiration which varies from that in the leaflet is contrary to the teaching of the author of the method.

THE KHARTUM SCHOOL OF MEDICINE

SIR A. WEBB-JOHNSON'S REPORT

At the request of the Committee of Management of the English Conjoint Board and on the invitation of the Director of the Sudan Medical Service, Sir Alfred Webb-Johnson acted as Visitor to the Kitchener School of Medicine at Khartum during the period of the final examinations in January, 1939. On June 16 the Committee of Management received a full report from Sir Alfred Webb-Johnson, of which we print below an abridged version. In his introduction Sir Alfred records gratitude to the officers of the Sudan Medical Service and in particular to the Director, Dr. E. D. Pridie, for their hospitality and the opportunities they gave him to inspect the school and the various classes of hospitals and dispensaries of the district.

Control of Infection in the Sudan

In addition to being responsible for the care of the people in case of illness, the Medical Department shoulders a tremendous responsibility not only in the control and prevention of infective diseases which are endemic in the country and may appear at any time in epidemic form but also in constantly guarding the inhabitants against the importation of infections from across the frontiers. This entails the waging of perpetual war against infective diseases and the insect vectors of infecting agents, and the exercise of the keenest vigilance over the steady stream of aircraft which brings distant countries within a few hours' journey of the Sudan. The advantages of rapid transit carry with them the dangers of importation of vectors of disease from countries in which such infections as yellow fever, sleeping sickness, and other scourges of man and beast are endemic. Desert tracts which formerly made effective barriers between districts and could only be crossed by camel in several weeks can now be traversed by fast aeroplanes in a few hours, while the whole African continent can be crossed in a few days.

The resulting dangers are ever present in the minds of all engaged in the Medical Service of the country. They influence the teaching in the medical school; they lead to a close and unbreakable link between therapeutic and preventive medicine; and they make it necessary for all officers of the Medical Service to be interested in, and prepared to take an active part in, measures for either the prevention or treatment of disease. The service of qualified medical men is supplemented by a host of subsidiary officers working in native villages where, for economic, social, and psychological reasons, no qualified medical man could be expected to sojourn for longer than is necessary for inspection and supervision. In dispensaries and dressing stations these subsidiary officers, who have had considerable training as hospital orderlies and assistants, and have passed a special examination, act as outposts for the treatment of minor ailments and as scouts to give warning of any suspected infection. An inspection of these units, which are all based on general hospitals, convinced me that the system is satisfactory and effective, and definitely preferable to a system of peripatetic mobile units paying occasional visits to various districts.

Education and Examinations

The first step towards systematic education was the establishment of the Gordon Memorial College by Lord Kitchener. It was but a short time before it was realized that the Sudanese were an extremely intelligent people, and it soon became obvious that one of the fundamental requirements for an efficient Medical Service was the creation of a School of Medicine for Sudanese students, so that educated natives might be associated with the promotion of health and happiness in their own country.

The standard of general education attained by the pupils in Gordon College was difficult of assessment owing to the lack of a standard for comparison. Last year, however, it was arranged for the first time for the pupils of the College to enter for the Cambridge School Certificate. Slight modifications were very sensibly made in the examination test in order to meet local conditions. Arabic took the place of English as the native tongue, and English was counted as a foreign language and was made an obligatory subject. The results of the examination arrived during my stay in Khartum: of twenty-two pupils entered for the examination twenty gained the certificate, and sixteen reached matriculation standard.

The foundation of a School of Medicine at Khartum was proposed by Lord Kitchener on the occasion of his last visit to the Sudan. The proposal was eventually carried into effect, and the Medical School was opened in 1924, largely owing to the generous gifts of natives of the country. Since its foundation the students have been selected from amongst the most successful pupils of Gordon College; they have been given their medical education without charge; they have been required to live in a students' hostel for which again no charge is made; and they have been given an allowance of £E1 per month. Inefficient students have been weeded out in the preliminary and intermediate parts of their training. The new students admitted in any one year have never been allowed to exceed ten in number. The original objective was to reinforce the Sudan Medical Service by an average of six newly qualified doctors each year. The numbers at present being admitted to the school provide for the addition of about six newly qualified doctors every two years.

The limitation of numbers leads to a high standard of individual tuition, and the drafting into other employment of men found unsuitable in the early years of the curriculum results in the training of a number of students who are in a high state of preparedness for the final examination. The students work very hard, and never require any stimulating to increased effort—on the contrary, the Registrar has to insist on a less serious concentration on reading.

The Final Examination

Of seven candidates for the final examination in all three clinical subjects at one time only one candidate failed to obtain a pass mark, and he failed to satisfy the examiners in only one part of the medicine examination. The standard required for a pass was 60 per cent. The examination was of a searching character, and the examiners required evidence of a high standard of efficiency before awarding the mark required for success. There is no clinical examination in obstetrics, but this will be arranged for at the next examination. The candidates were extremely well informed; the papers were very legibly written; the English was well composed and spelling was good. This is largely the result of the high standard of teaching at Gordon College. Instruction in English is to be continued in future during the two years in which the students are working in the Science School after leaving Gordon College, so that an even higher standard is expected.

The answers in the viva voce parts of the examination were clear, straightforward, and to the point, and the candidates were quick and ready in discussion. The students are obviously well trained in clinical methods; they examined patients very thoroughly and methodically. They displayed a refreshing reliance on careful clinical examination of the patient instead of making an immediate demand for *x*-ray and laboratory assistance before attempting a diagnosis. They gave the impression that they would bring ready help to patients in the provinces without demanding aids to diagnosis which it would be impossible to supply in some isolated districts. Besides acting as an observer I took part personally in the viva voce parts of the examination in all subjects. I also read the papers, and was in complete agreement with the marks awarded by the examiners. The standard attained by the best candidates was a very high one. A very wise condition is made that a candidate referred in one subject must continue to attend the clinical practice of the hospital in the other departments to the satisfaction of his teachers during the time he is referred for re-examination.

Postgraduate Work

Successful candidates receive their diplomas from the Governor-General personally. They are enrolled in the Government service, but before being appointed to independent posts they have to serve for two years as house officers and residents at one of the large general hospitals. At the expiration of ten years they are required to return to Khartum for six months' postgraduate study.

With this thorough undergraduate and graduate training there is no doubt of the knowledge acquired by the students of the school. There has been some speculation as to whether such individual tuition, carried on through the whole of their undergraduate and the beginning of their graduate career, may not lead to the doctors, when launched into independent posts, being not sufficiently self-reliant, and not sufficiently capable of keeping themselves up to date by reading current medical literature. Such doubts and fears as have been entertained have, in the judgment of those in control, proved absolutely groundless. I had many opportunities of meeting old students of the school. I found them to be keen, intelligent men of considerable confidence and self-reliance, with a loyal attachment to their school and to their directorate.

Medical School and Laboratories

The medical school is well equipped and the laboratories are excellent in every way. There is a good library, which is more than adequate for the needs of the students, but, as it is hoped to make it a circulating library for the officers of the Medical Service, gifts of books will be greatly appreciated.

In the Stack Laboratories instruction is given in pathology, bacteriology, and parasitology, the routine work of the hospitals is carried out and special investigations are made if required from any part of the Sudan. In addition, lymph for vaccination against small-pox is prepared, as well as anti-rabies vaccine and many other protective inoculations. A large amount of research work is carried out, and the whole department is extremely active and vigorous under the able direction of Dr. Horgan. A railway coach has been equipped as a mobile laboratory, and is available for preventive work or investigation in any part of the country which is accessible.

Much of the work carried out in the Stack Laboratories was conducted in former days in the rooms furnished and equipped in Gordon College by the late Sir Henry Wellcome for agricultural and medical research. There is no doubt as to the wisdom of the decision to separate the two branches. The medical research branch is now in immediate touch with the principal hospital and the medical school, and is under the control of an executive officer charged with the responsibility of advising as to the practical application of new discoveries.

Maternity Work

Owing to national customs and prejudices it is difficult to arrange for the students to attend maternity cases in the patients' homes, but the number of deliveries they see and actually attend is steadily increasing.

An admirable school of native midwives is conducted at Omdurman. Two British ladies, qualified as nurses and midwives, here undertake the instruction of native women in the essentials of efficient and cleanly maternity work. An antenatal clinic is held at the school, and the pupils are taken out to cases after a preliminary course of instruction in theory and practice. When it is appreciated that most of the pupils have never even seen a pair of scissors, and have to be instructed in their use, it is astounding that they can be trained as useful midwives for outlying country districts in so short a time as six months. But so it is, as periodical tours of inspection go to prove.

Proposed Developments

Great developments are planned for the improvement of secondary and post-secondary education in the Sudan. Gordon College, which was originally founded as a vocational primary school, has grown into a vocational secondary school; but when Lord Kitchener declared it open he foreshadowed the time when Khartum would be a centre of advanced education of university standard. In my view that time has come. Gordon College pupils are to be moved to new buildings to the north of Omdurman and at Medani. The college buildings will then be available for the convenient housing, in one building or a group of buildings, of several departments of advanced education which have developed in Khartum and are now housed in different parts of the city. When this concentration is brought about a centre of University College standard will be established. The departments of arts, science, agriculture, engineering, and veterinary science and the Kitchener School of Medicine should all be brought under the influence and control of this centre, which would soon develop a university spirit. Any delay in carrying out this natural development will only be in the nature of artificially putting the brake on the inevitable.

I recommend that immediate steps be taken to perfect an organization so that, directly the buildings of Gordon College are available, the Gordon University College can be launched. In my opinion it will not be long after that before there is a movement for the establishment of a university in Khartum, and this movement should be encouraged in every way.

In the hospitals of Khartum and Omdurman there is bed accommodation for 650 patients: the number is shortly to be increased to 750. The old hospital on the river front, which is some distance from the medical school, is to be demolished. The Director's offices are to be moved into the present civil hospital next to the medical school, and a new hospital is to be built on the more easterly part of the site. Plans are prepared, and building will be started without delay. By this arrangement a 500-bedded hospital will be erected in the immediate vicinity of the Stack Laboratories and the medical school, which will be a great advantage to medical education. With the women's special hospital and the men's new hospital at Omdurman and the hospital in Khartum there is ample opportunity for clinical instruction and practice.

Adoption of Recommendations

In general accordance with recommendations put forward by Sir Alfred Webb-Johnson in the conclusion of his report, the Committee of Management recommended to the Royal Colleges:

1. That, subject to a special recommendation from the Director of the Sudan Medical Services, a graduate of the Kitchener School of Medicine, Khartum, who has completed not less than two years' hospital experience subsequent to qualification, be exempted from the First Examination and be admitted to the Final L.R.C.P., M.R.C.S. Examination on completion of twelve months' practice in a recognized medical school and hospital in this country.

2. That a graduate of the Kitchener School of Medicine, Khartum, be admissible to the examinations for the several postgraduate diplomas granted jointly by the Royal Colleges on complying with the regulations for admission to these examinations.

3. That the thanks of the Royal Colleges be given to Sir Alfred Webb-Johnson for his report.

The Comitia of the Royal College of Physicians of London and the Council of the Royal College of Surgeons of England have adopted these recommendations.

The Italian Congress of Obstetrics and Gynaecology will be held at Turin from October 15 to 18 under the presidency of Professor Cova. The subjects for discussion are gynaecological symptoms in extragenital morbid processes, ovarian hormone therapy in obstetrics and gynaecology, obstetrical and gynaecological radiology, painless childbirth, and gynaecological lesions from contraceptive practices. Further information can be obtained from Professor Giuseppe Valle, Regia Clinica Obstetrica, via Ventimiglia, Turin.

REHABILITATION AFTER ACCIDENTS

The first part of the Final Report of the Interdepartmental Committee on the Rehabilitation of Persons Injured by Accidents[1] *was summarized in our issue of August 19 at page 417.*

Administration of Fracture Services

In its interim report[2] the committee pointed out that the provision of a network of fracture services covering the whole country would call for careful planning and the adjustment of the scheme in points of detail to meet local needs and conditions. To this end it recommends the setting up of joint committees representative of the local government authorities having hospitals under their control and the regional councils of the voluntary hospitals. The Joint Hospitals Advisory Board in Manchester is the first committee of this kind to have worked out a complete scheme for fracture services in its area (*Journal*, December 24, 1938, p. 1334), and the committee strongly recommends the setting up of similar standing joint committees in areas where this has not already been done. The placing of a statutory obligation on the local authority in this respect is not advocated, but the following general recommendations are made:

(1) That the County Councils and County Borough Councils which have powers under the Public Health Act, 1936, of making hospital provision for the needs of their areas should be asked by the Government to review, in consultation with the representatives of the voluntary hospitals in their areas, the existing provision in their areas for the treatment of fractures and allied injuries and prepare schemes for an effective fracture service. (The part of the local authorities in such plans might be either the provision of clinics themselves in their hospitals or the subsidizing of clinics in the voluntary hospitals or both.)

(2) That the schemes when drawn up should be submitted to the Ministry of Health or the Department of Health for Scotland for examination and advice.

(3) That the medical officers of health should be asked to report periodically on the working of the arrangements made.

(4) That the Departments should, in the case of areas for which no plans are prepared, appoint one or two independent commissioners to hold a local inquiry into the circumstances and publish their report.

If a fracture clinic is to maintain its efficiency it should handle "not much fewer than 400 cases a year." Every teaching hospital should have a fully staffed and equipped fracture clinic; at present only fourteen of the thirty-four teaching hospitals have such clinics. Of other general hospitals with 200 or more beds, which should be able to create fully organized fracture departments, only twenty-five have done so—eighteen out of forty-eight voluntary hospitals and seven out of ninety municipal hospitals. A further group of 112 general voluntary hospitals with 100 to 200 beds presents a more difficult problem. Properly organized fracture clinics already exist in twenty-seven of them. It should be possible for most of the others to follow suit, and in most areas their fracture departments should be linked up with a central clinic, preferably one in connexion with a teaching hospital. The problem of a final group of 588 hospitals with fewer than 100 beds admits of no ready solution. A certain number of them "should certainly be advised not to deal with fractures at all beyond possibly giving 'first aid' and then sending the cases elsewhere." For the remainder there must be a close liaison with the nearest large hospital with a fracture clinic.

The problem of the smaller hospitals is bound up with that of providing an adequate fracture service in rural areas. There are two governing considerations to be borne in mind: (1) every case should be seen by an expert within a few days, and in general it is better that a case of fracture should be treated by an expert even at the cost of some delay than that it should be treated as a matter of urgency by the nearest hospital or medical practitioner; (2) a compound fracture is a serious surgical emergency requiring immediate operation by an expert. It follows then that either the patient must be brought to the expert at the central hospital or the expert must visit the patient in the local hospital. The Oswestry scheme provides an example of the former method. All cases are brought into the central hospital forthwith. Unless their homes are in the immediate vicinity of the hospital they are retained as in-patients until they can be safely discharged to their homes. Patients who live sufficiently near the hospital attend as out-patients for continuation of treatment. For cases living at a distance thirty-five small after-care clinics (distributed over eight counties) have been established which are visited at intervals of about a week by "orthopaedic sisters" who bring the case into hospital if it is not doing well and they cannot deal with it themselves. During the interval between visits the patient is under the supervision of his general practitioner. The second method is being elaborated in the three counties served by the Wingfield-Morris Orthopaedic Hospital at Oxford. Fracture cases are treated in the hospitals in the small country towns. These hospitals are visited regularly by surgeons from the Wingfield-Morris Hospital, and surgeons at the local hospitals are being trained in fracture work. Difficult cases are transferred to the Wingfield-Morris Hospital. The scheme is at an early stage of development, but aims at making the local hospitals safe places for the treatment of fractures by the local staff, working in co-operation with the staff of the Wingfield-Morris Hospital. The ultimate solution of this difficult problem will probably be found in a combination of the two methods.

Reconditioning the Injured Workman

In the great proportion of cases treated in an organized fracture service return to work immediately after discharge from the hospital will be possible. In a number of cases, however, there is an unhappy and burdensome gap between discharge from hospital and return to work, either because the hospital is not provided with the equipment for the physiotherapy and remedial exercises required for completing the full restoration of functional activity, or because the man's normal work is of so arduous a character that a general reconditioning is needed as well to fit him for it. The Interdepartmental Committee has given careful consideration to a scheme for the establishment of residential rehabilitation centres in connexion with fracture clinics for the further treatment of such cases, which was placed before it by the Joint Committee of the British Medical Association and the Trades Union Congress (*Supplement*, December 18, 1937, p. 367). It regards as desirable the establishment of experimental centres of this kind, but takes the view that it would be premature to attempt to decide the extent or nature of the provision needed for these cases until much more experience has been gained of the effect of the full scheme of treatment, and especially the effect of adequate physiotherapy and remedial exercises. Meanwhile, it makes the following recommendations:

(1) That systematic provision should be made for reconditioning (*a*) such cases as on discharge from the clinic need a course of "toning up" before they are equal to the strains and stresses of heavy manual work; and (*b*) cases in which complete functional recovery has not been effected in the hospital.

(2) That this in many cases can best be given by graduated work at the injured person's previous place of employment, and that the Departments immediately concerned should take

[1] Final Report of the Interdepartmental Committee on the Rehabilitation of Persons Injured by Accidents. 1939. H.M. Stationery Office. (3s. 6d.)

[2] Interim Report of the Interdepartmental Committee on the Rehabilitation of Persons Injured by Accidents. 1937. H.M. Stationery Office. (4d.)

up the question with the major industries of the country with a view to the thorough examination of the possibilities and to the organization of systematic arrangements for the purpose.

(3) That for cases where such work cannot be provided facilities for remedial activities should be made available. Such remedial activities might be provided in connexion with centres established under the Government's National Fitness movement, or (as is being done in some cases already by individual firms or voluntary societies) at special reconditioning centres, or otherwise. The local authorities should, in preparing schemes for fracture services, in consultation with the Hospital Regional Councils, include arrangements for the provision of such facilities. It is very desirable that one or more experimental centres should be started as quickly as possible.

Financial Considerations

The establishment of an organized fracture service should effect a saving as regards the cost of in-patient accommodation by increasing the proportion of cases treated as out-patients and by shortening the period of treatment necessary in any case. On the other hand, allowance must be made for the probable increase in the number of patients treated and for the cost of more complete methods of treatment and after-care. Many hospitals have no, or only limited, facilities for treatment by physiotherapy and remedial exercises. In many instances, therefore, though not necessarily immediately, expenditure on new accommodation will be necessary and, in general, the cost of maintenance of a complete fracture service will involve some addition to the general expenditure of the hospital. It has been suggested that a charge in respect of the treatment of a workman injured in the course of his employment should be recoverable from his employer; this question is one which will probably be considered by the Royal Commission on Workmen's Compensation. It has also been suggested that the accident insurance companies should be called upon to contribute to the cost of fracture clinics. On this point the committee does not see its way to making any recommendation, and regards the question as one for the consideration of the accident offices.

In road traffic accident cases the principle of reimbursing the hospitals for the cost of treatment of these patients is already recognized, though only to a limited extent, by the Road Traffic Act. The treatment of road accidents costs the voluntary hospitals of the country something in the neighbourhood of £200,000 a year, only about half of which is recovered. At present, where the accident is one for which the motorist is responsible, the Road Traffic Act provides for payment up to a maximum of £5 for out-patient cases and £50 for in-patient cases. The committee finds it difficult to understand why if a liability in respect of the cost of treating the injured persons is to fall on the motorist that liability should be subject to arbitrary limits. It sees no justification whatever for allowing the motorist to impose on a charity any financial burden in respect of an accident for which he was responsible, and therefore recommends that these limits should be removed.

As to the third and largest group of cases—that of sporting, domestic, and other miscellaneous accidents—the suggestion that approved societies should, out of the funds at their disposal for additional benefits, contribute to the additional cost of the hospital treatment of their members in a fracture clinic is commended to the consideration of the Ministry of Health. Some of the approved societies already do this, but the matter is left to their discretion, and the payments made represent only a fraction of the cost of treatment.

Useful as the aids to be derived from the different sources indicated in respect of these three distinct groups of cases may be, they are neither certain enough nor sufficient to ensure the support that may be needed to create without undue delay the network of fracture services throughout the country that is urgently needed. The committee therefore suggests that there is a strong case for the local authority making an annual contribution, or increasing the contribution already made, towards the cost of maintenance of the fracture departments of the hospitals in its area. They have power to do this up to the limit of a rate of one and one-third pence in the pound, under Section 181 (3) of the Public Health Act, 1936, and the committee urges that the Ministry of Health and the Department of Health for Scotland, where at the moment there exists no power corresponding to Section 181 (3) of this Act, should take steps to promote a solution of the problem on these lines.

Orthopaedic Special Areas

Twelve out of the thirty-four medical schools in Great Britain are located in London. Only four of them have fracture clinics organized on the lines recommended in this report. The L.C.C., on the other hand, as long ago as 1936 approved "a gradual policy of concentrating fractures in selected hospitals," and because of this some of the teaching hospitals are already facing a serious falling-off in the number of fracture cases brought to them and consequent difficulties in arranging for the limitation of their students.

"These difficulties are likely to become still more acute in the future unless the voluntary hospitals themselves take steps to reorganize their treatment of fractures on modern lines. We accordingly recommend that the Ministry of Health should take up the matter with the Voluntary Hospitals Committee and the County Council, should invite them to proceed actively with the preparation of a joint scheme, and should offer its assistance."

Like London, Scotland has certain special difficulties to which the committee has given consideration. It has investigated in some detail a recent effort at rehabilitation following industrial accidents in the County of Lanark, which has a largely industrial population of 500,000 and no general hospital much larger than the cottage type. The Lanarkshire Orthopaedic Association in 1935 set up two clinics which are not definitely bound to any existing hospital. At these clinics the patients for the most part have undergone hospital treatment and been returned from it to the care of their doctors, who, finding rehabilitation slow, have passed them on to the clinics of the association. This scheme is of interest in showing (1) that the need for local after-care as complementary to the hospital resources of the area has been appreciated; (2) that several agencies, voluntary and official, combine to make the scheme financially possible; and (3) that an independent organization aiming at rehabilitation may grow up in the absence of a general scheme. The weak spot in such a scheme is lack of continuity in control and treatment. But the committee takes the view that provided the importance of such continuity is borne in mind there is scope in Scotland for development of the "outside" orthopaedic clinic idea, which may, indeed, become an essential link in the supervision of accident and orthopaedic cases. A general review of the facilities for accident treatment in the Highlands and Islands has also been undertaken. Hospital accommodation in these areas seems to be reasonably adequate, but the equipment of the hospitals is "not always all it might be." The real difficulty is one of transport, and the steps taken to meet it are in the main "reasonably satisfactory."

Undergraduate and Postgraduate Instruction

In 1935 each student at "a great London teaching hospital" saw on an average during his six-months' in-patient dressership only seventeen fracture cases; at another teaching hospital each dresser saw on an average only eleven such cases. This and other evidence leaves no doubt that at present the training of students in fracture work is seriously deficient. It is possible for a student to qualify without ever having seen a fracture treated. Some

modification of the present teaching arrangements is urgently needed, and the committee recommends that a period of teaching in the fracture department which is, or ought to be, part of every teaching hospital should be made obligatory. It would not be unreasonable to divide up the six-months' surgical dressership into three periods so that each student would be a dresser for two months in the fracture department. Even one month spent in daily attendance in a fracture department would be much more valuable than the haphazard seeing of odd cases of fracture scattered over a six-months' dressership. Or if it is deemed that a six-months' dressership is all too short for surgical instruction, then, it is suggested, an additional period of one to three months of dressership in the orthopaedic and fracture departments should be made compulsory.

In connexion with postgraduate instruction the committee makes two recommendations: (1) a session on fracture treatment should regularly be included in the refresher course for insurance practitioners; (2) a centre for research and postgraduate instruction should be established in London, probably at Hammersmith.

Other Matters

First aid and ambulance services are among the other questions which the committee has had to consider. It recommends that the first-aid arrangements now required by law in certain industries should be regularly supervised by a doctor; that first-aid men should be required to attend refresher courses and requalify three years after obtaining their original certificates and thereafter at intervals of five years; and that where the provision of a first-aid room is required the man in charge should have some special training on approved lines over and above the ordinary first-aid training. Special attention should be given to the early treatment of shock before removal of the patient to hospital, and the need for instruction in the use of the Thomas splint and its provision at first-aid stations should be considered. County and county borough councils, when discussing, in consultation with the voluntary hospitals, the provision of a full fracture service for any area, should also devote some attention to the co-ordination and organization of the ambulance services in that area. Standardization of the design of ambulances and stretchers is also necessary, and, in view of the many different bodies concerned, the committee suggests that the Government may have to take the initiative in seeking a solution of this problem.

Even when the network of organized fracture clinics that the committee visualizes is built up, there will still be certain cases in which restoration to full working capacity can only be brought about by the fitting of an artificial limb. The committee calls special attention to the arrangements made in July, 1936, whereby the expert services of Queen Mary's Hospital, Roehampton, and the Ministry of Pensions limb-fitting centres in the provinces were made available for the civilian population. Expert surgical oversight and control of the supply and fitting of an artificial limb are essential if the best results are to be obtained, and the experience of the Ministry's services in this respect is unrivalled. Much greater use might be made of them than is the case at present. The possibility of keeping these limb-fitting centres in existence and making them a general public service should be considered.

There will also be patients who, because of some degree of permanent disablement, cannot resume their previous occupations. They may number one to two thousand a year, and in those under 35 some vocational training should be attempted. The committee recommends that the Ministry of Labour, which has had experience of this work in training over 100,000 of the war-disabled, should establish as an experiment a vocational training centre. Finally, the committee takes the view that an almoner's department with a trained staff should be regarded as essential to the organization of a fracture service.

PROTECTION OF CONSULTANTS' AND SPECIALISTS' PRACTICES

THE B.M.A. SCHEME

The Council of the British Medical Association has prepared a Scheme for the Protection of Practices of Consultants and Specialists who, in time of a national emergency, are engaged on whole-time Government service. The fundamental principles of the scheme are:

I. That the seniority of "absentee" consultants and specialists holding hospital appointments should be preserved.

II. That consultants and specialists in England and Wales, who for a period of at least two years have been predominantly engaged in consultant or specialist practice and who sign a declaration to that effect and to the effect that they are not participating in any scheme for the protection of practices of absentee general practitioners, should be invited to join a communal scheme for their financial protection.

HOSPITAL APPOINTMENTS

The Council has passed the following resolution, which has been transmitted to voluntary and municipal hospital authorities and to the Ministry of Health:

"That in order to protect the practices of consultants and specialists employed on whole-time Government service the seniority of 'absentee' consultants and specialists holding hospital appointments should be preserved. For this purpose it is suggested that:

(i) No new appointments to the consultant and specialist staffs of municipal and voluntary hospitals should be made on a permanent basis during the period of war and for a period of twelve months thereafter. Where it is necessary to make an appointment it should be temporary and terminable within twelve months of the conclusion of hostilities.

(ii) It is desirable that the period of war service of an 'absentee' practitioner should be added to the age of retirement in respect of his hospital appointment(s).

(iii) It is desirable that hospital appointments of 'absentee' practitioners which would normally be terminated due to age limit should be continued, the period of war service being added to the age limit in each case."

THE FINANCIAL SCHEME

The financial scheme, which will be administered by trustees nominated by the Royal College of Physicians, the Royal College of Surgeons, the Royal College of Obstetricians and Gynaecologists and the British Medical Association, is embodied in a Trust Deed. Under its provisions each participating member not employed on whole-time Government service undertakes to contribute to a pool, for the period of the emergency and for an agreed period thereafter, one-half of any increase in his normal "earned income." For the purposes of the scheme, "earned income" is defined as all income of a participating member derived (whether in partnership or alone) from the practice of medicine and/or surgery including (i) emoluments from salaried hospital or other appointments, whether whole time or otherwise, (ii) any share of earnings of a locum tenens or an assistant, and (iii) profit made on the sub-letting of professional consulting rooms.

The pool will be distributed to consultants and specialists employed on whole-time Government service in proportion to the losses they have incurred.

Availability and Object of Scheme

The scheme is available to consultants and specialists in England and Wales who for a period of at least two years have been predominantly engaged in private consultant or specialist practice and who sign a declaration to that effect and to the effect that they are not participating in any scheme for the protection of practices of absentee general practitioners. The Trustees are empowered to decide in each case whether

any person desirous of becoming a member is or is not, for the purposes of the scheme, a consultant or specialist.

Membership of the scheme entitles a consultant or specialist who becomes engaged on whole-time Government service to receive from the funds compensation towards the financial loss suffered in respect of his practice during his absence.

Brief Outline of the Scheme

A participating member is required to pay an entrance fee of £1 1s., the stamp duty on the Agreement with the Trustees (10s.), and an annual subscription of 10s. 6d.

(A) *Members remaining in Private Practice.*—On the occurrence of a national emergency a participating member who continues in private practice will be required to subscribe to a fund administered by the Trustees an annual contribution, comprising one-half of the sum representing the increase between (*a*) the average annual amount of his "earned income" (as previously defined) during the preceding two years, and (*b*) the amount of his "earned income" in each year from the commencement of the emergency until the termination of the scheme. Counsel has advised that members making contributions will be entitled to deduct income tax therefrom and that the amount of such contribution will be allowed as a deduction in computing the member's liability to surtax.

(B) *Members engaged on Whole-time Government Service.*—On the occurrence of a national emergency a participating member who becomes engaged on whole-time Government service (an "absentee member") or his nominee(s) will receive from the funds of the scheme an annual payment on a dividend basis in proportion to the annual loss incurred. The annual loss will be computed in much the same manner as the annual gain of the consultants who remain in private practice—that is, the difference between the "earned income" during each year of the emergency and the average annual "earned income" for the two years preceding the emergency. Government pay received by absentee consultants will be taken into consideration in assessing the annual loss.

Confidential Nature of the Scheme

When the scheme comes into operation each participating member will be required at his own expense to arrange for a chartered or incorporated accountant to submit for the use of the Trustees' accountants (Messrs. Price, Waterhouse and Co., 3, Frederick's Place, E.C.2) certain certificates. These certificates will simply relate to the increase or decrease in annual "earned income" during the emergency as compared with pre-emergency figures, and will be regarded as *strictly confidential* by the Trustees' accountants. Although the Trustees are empowered to request information and accounts relating to any certificate furnished under the scheme, the only person to whom a consultant need normally divulge his income is the local chartered or incorporated accountant, whose services are utilized by him under the scheme. Members of the scheme will receive at the appropriate time an explanation of the method to be adopted in computing the increase or decrease in "earned income."

Applications for Membership of Scheme

Every practitioner desirous of becoming a participating member will be required to enter into an agreement with the Trustees. The Trust Deed, however, provides that the scheme shall not come into force until the Trustees so declare by written notice to the participating members and in any event not until there are at least 500 participating members.

Consultants and Specialists in England and Wales have recently been asked to signify their willingness or otherwise to participate in the scheme. The Association is anxious that every practitioner predominantly engaged in private consultant or specialist practice who is able to conform to the criteria set out in the first paragraph under the heading "Availability and Object of Scheme" should have details of the scheme. Practitioners in this category who have not received particulars are requested to apply for a copy of the scheme to the Secretary, British Medical Association, B.M.A. House, Tavistock Square, London, W.C.1.

Local News

FRANCE

[FROM OUR PARIS CORRESPONDENT]

Health and Old Age Insurance for Doctors

The powerful Confédération des Syndicats Médicaux Français, to which two out of every three French doctors belong, and whose enterprising secretary-general is Dr. P. Cibrie, has formally endorsed the so-called Pomaret scheme for the compulsory insurance of French doctors against sickness and old age. But certain other medical corporate bodies and several distinguished leaders of the medical profession have expressed profound disapproval of important features of this scheme. The most snarled over bone of contention concerns the proposal that when a doctor reaches the age of 65 and wishes to continue to practise he shall be disqualified for the pension to which he may have contributed throughout a long professional life. The intention of this clause is to make way for younger doctors embarrassed by competition with their seniors. Looked at from this angle, the problem is one of supply in excess of demand. While superfluous coffee and wheat can be burned, this solution for elderly but still competition-capable doctors has seemed too ruthless, the more so because if the Pomaret scheme becomes law they can be bought off. One of the most sensible suggestions recently made for the settling of this controversy is that a referendum should be taken in order that every doctor interested in the matter can throw his weight into the scales on whichever side pleases him.

Grancher System for the Prevention of Tuberculosis

The system, started in 1903 by Professor Joseph Grancher, of boarding out healthy children from tuberculous homes in foster homes in the country was the subject of a comprehensive survey by Professor Marfan at a recent meeting of the French Academy of Medicine. With its central office in Paris, this system has been decentralized in such a way that the provincial centres now enjoy more or less complete autonomy. The provinces alone are dealing with more than 5,000 foster children this year. As for the results, so far as the threat of tuberculosis is concerned, it has been found that among 4,000 children dealt with by the central Paris office there were only twelve who developed tuberculosis after being removed from tuberculous to healthy homes, and among these twelve there were as many as nine who recovered under sanatorium treatment. With regard to costs, Professor Marfan made this instructive comparison. A tuberculous patient requires three years' treatment in a sanatorium at the cost of 15,000 francs every year, and even so only one out of every three tuberculous patients recovers. To achieve a single recovery it is therefore necessary to spend 135,000 francs, whereas it costs the Grancher system only 25,000 francs to prevent a child from becoming tuberculous.

Congestion in the Medical Profession

In an editorial note in a recent number of *Concours Médical* Dr. J. Noir deplores the unwillingness or inability of many doctors in Paris to join medical societies whose object is to defend the rights of the medical profession. There are now about 6,970 doctors in Paris and the Department of the Seine, but hardly 2,500 have joined the "syndicats" which combine to form the Fédération Médicale Parisienne. This negligence on the part of many doctors may to some extent reflect their straitened circumstances, membership fees having become too onerous in this period of cut-throat competition. In 1905 there were only 2,900 doctors in Paris and only 18,000 in the whole of France, whereas now, thirty-four years later,

there are as many as 30,115. Yet the population of the country has hardly grown at all in the interval. At the same time there has been an enormous expansion of the gratuitous services provided by hospitals, dispensaries, and similar institutions.

Correspondence

Treatment of Gastric and Duodenal Haemorrhage

SIR,—The communication by Professor E. Meulengracht published in your issue of August 12 (p. 321) demands comment, for the lessons implicit in it are so dangerous that neither gratitude for his visit nor admiration for his mastery of our language should deter criticism. After close examination of his words I believe that I am expressing his views fairly when I say that in cases of haematemesis and melaena he advocates that all patients should be allowed to move about, and particularly that they should be encouraged to eat and drink large quantities of a varied and liberal diet, including not only purées but slices of meat, cheese, and a "variety of dishes." His address, and previous accounts of his work, state that the primary object of the treatment is to diminish the risk to life presented by haemorrhage in cases of peptic ulcer. I am convinced that if his system is widely adopted in this country it will increase and not diminish the mortality, and it is a matter of regret that certain authorities, including my friend Professor L. J. Witts, have already given support to it.

Since the summer of 1936, in collaboration with Professor Samson Wright, I have been responsible for nearly all the cases of serious haemorrhage from the stomach and duodenum admitted to the Middlesex Hospital. In a preliminary communication we have shown how it is possible to distinguish between those cases in which the haemorrhage has been mild and those in which it is severe, and how it can be decided with accuracy whether haemorrhage has ceased or is continuing; we seek to learn what the actual risk to life is, what causes death when it occurs, and how mortality can be diminished. For mortality does occur, and even if we adopt the expedient of omitting from our series cases of cirrhosis of the liver and malignant disease we are left with a certain number of cases of true peptic ulcer which succumb to haemorrhage. None of our cases has been treated on the lines advocated by Professor Meulengracht, but I am not only convinced that critical survey of our failures could not suggest that such treatment would have saved a single life, but I am sure that had we persuaded the more serious cases to eat immediately and freely of a generous diet, including slices of meat and cheese, the mortality would have been increased.

The explanation of Professor Meulengracht's enthusiasm is probably given in his description of the disagreeable and dangerous state of exhaustion at one time produced in Danish patients by prolonged starvation, thirst, and immobility; such a state of affairs is outside my personal experience, but I can well believe that it would cause a serious and unnecessary mortality from dehydration and chloride depletion. It will nevertheless be a calamity if Professor Meulengracht's success in reforming this deplorable practice in his country is followed by the general adoption in Great Britain of a system which is, if applied to cases of proven gravity, not only dangerous but devoid of either logical or empirical justification.—I am, etc.,

London, W.1, Aug. 16. T. IZOD BENNETT.

Absorption of Fat

SIR,—The interesting account of the work of Morton and his co-workers on the distribution of vitamin A and A_2 which you report in the *Journal* of August 12 (p. 345) calls for a note from an anatomist. You say "there is no lymphatic system in fish, and it is suggested that vitamin A esters, in combination with protein, may help in the dispersion of these droplets and in the removal of fat from the tunica propria" of the intestine.

In 1769 William Hewson, co-partner of John Hunter, published an account of the lymphatic system in fish. He demonstrated the lymphatic vessels, thoracic duct, and intestinal lacteals in cod, skate, haddock, and whiting. He indicated the absence of lymphatic glands in fish and reptiles and their presence in birds and mammals. He also noted the relative absence of valves in the lymphatic vessels of fish and their frequency in mammals. In particular, he stated "the lacteals in the cod (and I presume in most other fish) are remarkable for having a beautiful network of vessels between the muscular and villous coats of the intestines."

In 1926 R. H. Burne, physiological curator of the Royal College of Surgeons, described a system of "fine" vessels, probably of a lymphatic nature, which existed side by side with ordinary lymphatic vessels in the head and forepart of the body of the angler fish (*Lophius piscatorius*). He suggested that these "fine" vessels were probably the afferent component of a double lymph circulation, corresponding to the efferent component which constitutes the lymph vessels of mammalian anatomy. Burne discussed in detail the early evolution of the lymphatic system in the lowly vertebrates and its gradual segregation from the blood vascular system.

The view expressed by Lovern and Morton that "absorption of fat by fish differs from that obtaining in mammals, proceeding directly through the mucosal epithelium and not by a lymphatic system" is not tenable, nor is the claim that "the existence of a dense, continuous layer of connective tissue (stratum compactum) forms a barrier to fat transport as droplets, which accumulate in the adjacent tunica propria," inasmuch as the stratum compactum of the intestine of fish is no more compact than the submucous coat of many mammals.

The usual classification of fish into "fat" and "lean" is not adequate. Salmon, herring, and mackerel are "fat" fish, characterized by a high percentage of intramuscular fat. Cod, hake, haddock, and whiting are "lean" fish. The eel is characterized by large deposits of intra-abdominal fat, comparable to the kidney fat of well-fed mammals. The mesenteries also display varying amounts of fat, and the liver, ovary, and testis vary considerably from species to species in size and fat content.

Hewson suggested that the lymph of fish has a slower circulation than that of mammals, and stated that the lymph must be lodged for some time in the large lymphatic network of vessels before it is passed into the mass of the blood. He actually applied the term "varicose" to the lymphatic vessels of the fish.

In 1931 I called attention to the astounding fertility of both animals and plants which serve as a source of vitamin A; in the animal world the halibut and cod; in the vegetable world the cabbage family, lettuce, spinach, and the cultivated grasses such as oats, barley, and wheat. The eggs of the former are numbered by the million, the seeds of the latter by the hundred thousand. At the same time I called attention to the role of the phosphatic content of sea water in increasing the permeability to ultra-violet rays. The *Discovery* reports stated that the

distribution of diatoms, shrimps, and whales is greatest where the phosphatic content of the sea water is a maximum. The phosphate in sea water plays the same part as the phosphate added to glass in order to make it more permeable to ultra-violet radiations.

All attempts by the physiologists to work out a balance sheet for fat absorption have hitherto failed. The total amount of fat absorbed via the venules of the portal vein and the lacteals does not make up to more than 90 per cent. of the total fat ingested, even after allowing for fat excreted in the stools. The rich distribution of goblet cells containing mucin in the alimentary canals of all animal forms, the extremely rapid wasting and loss of fat deposits in cases of mucous colitis, and the imperfect balance sheet for fat metabolism suggest that some of the ingested fat may be concerned with mucin metabolism.

Verzár emphasized the fact that the absorption of fat is slower than that of any other foodstuff, that it is transformed into phospholipoids in the intestinal mucosa, and that about 10 per cent. of the total fat in the lacteals is in the form of a phospholipoid of the type of lecithin.

The interesting work of Morton and his colleagues may focus attention on the need for the study of the comparative anatomy of the lymphatic system so ably commenced by William Hewson.—I am, etc.,

Anatomy School, Cambridge, Aug. 14. H. A. HARRIS.

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Argyria and "Bismuthia"

SIR,—It seems to me that in cases of pigmentation due to generalized argyria of unknown origin one has nowadays to think of the possibility of prolonged use of gargles, mouth washes, mouth applications, and intranasal sprays containing silver, just as thirty or forty years ago one had to think of the possible prolonged use of silver nitrate pills for pains supposed to be due to gastric ulcer. Patients still insist on using old prescriptions whenever they think they are again suffering from the old symptoms. Moreover, I am sure that the majority of doctors do not know that the prolonged use of preparations such as argyrol for the throat, mouth, or nose, can produce generalized argyria. This was evident at last year's annual meeting of the British Association of Dermatology and Syphilis at Manchester.

Among many other patients a woman was shown with considerable facial pigmentation, which I thought must almost certainly be due to generalized argyria and not to haemochromatosis. She seemed to be otherwise healthy and knew nothing of any silver medication, but admitted the prolonged use of a gargle or mouth wash. I suggested that this might have contained argyrol. A doctor at the meeting was astonished, and told me he constantly used argyrol for himself and his family for any soreness of the throat, etc. I had, however, not long previously been informed about a doctor in America who did the same thing, with the result that he developed generalized argyria, shown by pigmentation of the face. It turned out afterwards that I was wrong in my suggestion regarding the patient in Manchester, for it was ascertained that the mouth wash or gargle she had been using was made up, not with argyrol but with simple silver nitrate.

But can one be certain that most cases of slaty or bluish-blackish pigmentation of the face in apparently otherwise healthy persons are due to generalized argyria? I admit that early argyria gives rise to a weird, *very slight*, greenish-bluish pigmentation of the face—perhaps best marked on the forehead—which apparently varies in distinctness from time to time, as it did in the case of a woman I saw about thirty years ago. In such a case, as in Sir W. Langdon-Brown's case (*Journal*, August 12, p. 368), chronic sulphaemoglobinaemia may be thought of as a possible explanation. The woman in question, however, whenever she had any gastric pain, had been using a prescription given her long previously by a well-known London physician—a silver nitrate pill. It is really quite natural that in commencing argyria the appearance of the pigmentation should slightly vary from time to time, according to the turgidity and vascularity of the skin and the degree of illumination. The skin can alter the apparent colour of pigment in or beneath it. I had a dark Oxford-blue spot excised from the forehead of a man, and under the microscope the blue spot was seen to be due to *brown* pigment (melanin) in naevus cells.

Well-marked later cases of argyria can hardly be mistaken for sulphaemoglobinaemia and are not likely to be confused with haemochromatosis—in spite of the famous haemochromatosis case, "Blue Mary." In a man I was consulted about two years ago or so the diagnosis, I found, had been already made out, for not only was there a history of prolonged use of a gargle or other intraoral or intranasal medicament containing silver but Dr. Sheldon of Wolverhampton had been consulted regarding the possibility of haemochromatosis and had practically proved that the cutaneous pigmentation was due to silver, having had a minute piece of skin examined by the spectroscopic method. Generalized argyria from silver salvarsan is known to occur, though it is extremely rare.

According to recent observation there seems also to be a generalized blackish pigmentation of the skin due to the prolonged use of bismuth, which, however rare it may be, will have to be borne in mind. It could be distinguished from argyria by the history and by the spectroscopic examination of the skin (to exclude silver pigmentation). I am certainly inclined to believe in the genuine existence of such a rare cause of generalized cutaneous pigmentation. For Professor David Riesman once showed me a man with black skin, who said that he had always been accustomed to take bismuth against a chronic tendency to diarrhoea, which was habitual to him. There was no history of taking any silver-containing drug, and the man could hardly be continuing his work as a commercial traveller if the pigmentation was due to Addison's disease. The patient was unfortunately completely lost sight of.—I am, etc.,

London, W., Aug. 13. F. PARKES WEBER.

Industrial Dermatitis

SIR,—Much of the unsatisfactory position that at present exists in regard to the diagnosis of industrial dermatitis arises from the phrasing and interpretation of the dermatitis section of the Workmen's Compensation Act, wherein the employer is made liable for "dermatitis due to dust or liquids." This very lack of definition often enables any eczematous case that arises in any works where there are operations involving "dust or liquids" to be classified as industrial dermatitis irrespective of the chemicals involved in those operations. The result is that a man with a typical seborrhoeic dermatitis may be diagnosed as occupational dermatitis because it seems to be the most obvious diagnosis where "dust or liquids" exist. The law was drafted in 1918 to fit the state of knowledge

existing at that time, when, speaking generally, industrial dermatitis arose solely from direct chemical contact with the irritant. To a physician engaged in full-time industrial practice where skin-protective measures are adopted such dermatitis is on the whole not common, and is comparatively easy of diagnosis in the early stages, as the physico-chemical properties of the irritant are known and the exposure of the workman can be estimated by a knowledge of working conditions.

The difficulty arises, as previous correspondents have pointed out, in those cases which resemble constitutional eczema in their distribution and where there is no obvious cause and effect of the alleged irritant concerned. It has been noticed that there are two common important sources of this acute "constitutional-like" eczematization of the skin encountered in industry. The first of these is sensitization of the workman to some chemical body, inorganic or organic, existing in the environment in which he works. Examples of such acquired allergy constitute the man who receives a burn by strong alkali or other chemical and whose skin erupts when in an atmosphere containing the chemical only in infinitesimal amounts, or the man who by inhaling some organic material develops a cutaneous hypersensitivity to that material. When one considers the opportunities for sensitization in modern industry the potentialities of such a source of dermatitis are more than apparent. The second source is that of mechanical trauma. Small cuts or burns may lead with or without secondary infection of the wound to a local eczema, and thence to a widespread involvement of other parts of the integument. Such cases may begin initially as a typical dysidrosiform eruption of the hands, and are conceivably explicable as "bacteriids."

Further investigation is therefore needed of the actual basic cause of alleged occupational skin trouble with less emphasis on the morphological distribution, which is often that of any eczema, and more on the chemical constitution and action of the irritant concerned. Modifications are also needed in the present definition of the dermatitis section of the Workmen's Compensation Act. A more definite statement in the certificate of the diagnosis of the causal irritant, if known, would exclude many non-occupational skin eruptions from the category of industrial dermatitis, and some provision should be made to meet the increasing importance of dermal manifestations resulting from the allergic aspects of industrial health risks.—I am, etc.,

Billingham, Aug. 21. GEOFFREY A. HODGSON.

Measurement of Arterial Blood Pressure

SIR,—Referring to the joint report of the committees on the standardization of the methods of measuring the arterial blood pressure in your issue of July 22 (p. 184), I would like to make some remarks. I feel justified in doing so as I have always felt the insufficiency of a subjective method for measuring blood pressure, and struggled for many years to devise a simple and practical apparatus for recording the blood pressure objectively.

I completed the "tonoscillograph" about fifteen years ago and have taken a great number of records, which I have often compared with those of Korotkow's auscultative method. Besides, a great many of these apparatuses are in daily use in different countries by practitioners, hospitals, and scientists, whose results have, so far as I know, confirmed my results. These are as follows:

1. The systolic sound appears consistently at a slightly lower pressure than the true systolic pressure, the difference, however, being negligible.

2. The diastolic pressure, as defined in the report of the committee, is consistently higher than the true diastolic pressure, the difference being sometimes as much as 40 to 50 mm. mercury, depending on the elastic properties of the arteries and the surrounding tissues—that is, on a factor outside the scope of the intended measurement, and of no physiological or pathological significance.

The origin, running, and the interpretation of the tonoscillographic blood pressure is described in my monograph *Tonoszillographische Blutdruckmessung und die Deutung der Blutdruckkurve*, Abderhaldens Handbuch der biologischen Arbeitsmethoden, Abt. V, t. 8, Berlin, 1931. The reliability and accuracy of the determination of the systolic and especially of the diastolic pressure, by means of the "tonoscillograph," can be judged by the results published by von Bonsdorff: "Zur Methodik der Blutdruckmessung: aus der med. Univ.-Klinik Göttingen" (Helsingfors). Von Bonsdorff compared the readings of my recording instrument with the measurements of the pressure inside the artery, determined directly with sensitive manometers applied to the punctured artery.

Unfortunately the discrepancy between the true diastolic pressure and the "standard diastolic" pressure does not depend solely on the true diastolic and systolic pressures. If this were so, the diastolic pressure as defined by the standards would serve a useful purpose, even if it would be different from the true diastolic pressure. As it is, however, the difference depends mainly on the elastic conditions of the arteries of the arm, which have no direct connexion with the blood pressure at all. It is therefore possible to find widely different values for the diastolic pressure as defined by the standards, although the true diastolic pressure may be the same.

Considering the great clinical importance of the diastolic pressure as the best expression of the peripheral circulation, I feel that every effort ought to be made to determine this as accurately as our present objective methods permit.—I am, etc.,

London, W.1, Aug. 11. J. PLESCH.

Chance in Medicine and Research

SIR,—In the *British Medical Journal* of July 15 (p. 110) Drs. L. J. A. Loewenthal and W. A. Wilson employ as an example the data of Dr. W. Cramer and Mr. E. S. Horning on the influence of oestrinization on the death rate of adrenalectomized mice. Cramer and Horning, in your issue of July 29 (p. 248), question the validity of the treatment afforded their data. In this connexion a brief statement on the analysis of multiply dichotomous tables should be of interest.

The simplest multiply dichotomous table is the 2×2 table, in which the data are divided, for example, into "controls" and "experimentals" on the one hand, and into "alive" and "dead" on the other. In examining such a table the null hypothesis is that the death rate of experimentals is no different from that of controls. The usual methods of testing this hypothesis are the chi-square test and the calculation of the exact probability, both of which are mentioned by Loewenthal and Wilson. These methods find, approximately or exactly, the probability that the death rates should be as different as those observed *if the null hypothesis is true*. If this probability is sufficiently small, it is concluded that the null hypothesis is contradicted, and that there is in fact a difference of death rate between controls and experimentals. Provided other factors have been randomized, the difference may logically be ascribed to the treatment.

The 2×2 table may be further complicated by a third dichotomy, such as sex, and the data of Cramer and Horning constitute such a $2 \times 2 \times 2$ table. In examining such a table the null hypothesis first tested must be that there is no inter-

action of all three factors together. Thus, for example, the data including only males constitutes a 2×2 table which shows a difference between death rates of controls and experimentals. Whether or not this difference is large, we test whether it is significantly different from that observed in the data including only females. It is equally logical and *logically equivalent* to consider in the same way either of the other two pairs of 2×2 tables into which the $2 \times 2 \times 2$ table may be divided. If the interaction of all three factors together is not significant, it is permissible to add the $2 \times 2 \times 2$ table in each of the three possible ways to form three 2×2 tables. These 2×2 tables provide information with regard to the interactions of the three factors by pairs and are tested in the usual way. On the other hand, if the interaction of all three factors together is significant, reduction of the table by addition cannot be justified, and would often conceal real effects.

The $2 \times 2 \times 2$ table may be tested for interaction of all three factors together by the chi-square test or by calculation of the exact probability. These tests have been discussed by Bartlett (Contingency table interactions, *Journal of the Royal Statistical Society*, Supplement, **2**, 248–252, 1935). My calculation of the exact probability for the data of Cramer and Horning shows that if the null hypothesis is true, the observed table will occur nearly as often as all other possible tables together, representing about 48.5 per cent. of the total frequency, and so cannot possibly be regarded as contradicting the null hypothesis. In fact, with the given marginal totals, the data could not be more closely in agreement with the null hypothesis, and reduction of the table by addition is amply justified.

Of the three 2×2 tables formed by reduction of the $2 \times 2 \times 2$ table, two have been examined. Loewenthal and Wilson examined the interaction of sex and oestrinization, and concluded that the data show no interaction. Cramer and Horning tested the interaction of oestrinization and mortality. They find that the data fall just at the arbitrary level of significance. My calculation of the exact probability is 0.02966 that the death rate after oestrinization should be so much less than that without oestrinization, or a probability of 0.05932 that the death rates should be so different, admitting the possibility that either might be the greater. The conclusion is that so great a difference would be observed in about one case in seventeen, and the data can hardly be regarded as significant. Cramer and Horning claim ". . . the advantage of large numbers . . ." to justify their reduction of the table by addition without regard to sex differences. Most emphatically it is no justification whatever, but rather the contrary. Thus it might have been that there was a marked effect of oestrinization in reducing the mortality in one sex, and an equally marked effect of increasing mortality in the other. In such a case the addition of equal numbers from the two sexes would show no effect of oestrinization, and would lead to an entirely fallacious conclusion. It would be interesting to know what attitude Cramer and Horning would have assumed with regard to the advantage of large numbers if it had been obvious that oestrinization had affected the sexes differently. The third way of reducing the $2 \times 2 \times 2$ table, ignoring mortality and examining the interaction of sex and oestrinization, yields no interesting information, testing only whether the experimenters divided males between treatment and control in the same ratio as females were divided.

Two points should be emphasized. First, a multiply dichotomous table should not be condensed by addition unless it has been shown that the interaction of all the factors together is not significantly large. In respect of this point Loewenthal and Wilson are at fault in failing to make the necessary test, but they may have thought it obvious that the data showed no interaction among all three factors. Cramer and Horning are more at fault in giving a reason for reducing the table which is as likely to conceal as to reveal real effects. All will agree with Cramer and Horning that ". . . it is not permissible for statisticians or anybody else to . . . rearrange figures unfairly." The second point is that, whenever the interaction of all factors together is not significant, the table should be reduced by addition in every possible way so as to extract all the information contained in the data. It is regrettable that Cramer and Horning, writing of Loewenthal and Wilson, said

" they rearrange the figures of our table, in a way which suits their argument, into an entirely different table; and they give to this new table a heading 'Adrenalectomy in Mice: Sex Incidence of Mortality with and without Oestrinization,' which does not appear in our paper. In this way they leave it to be understood . . . that the sex incidence formed an important part of our investigation and of our conclusions."

Rather than being criticized, Loewenthal and Wilson are to be commended for extracting information from the data which Cramer and Horning failed to extract—namely, that the data fail to show a difference between the sexes with regard to death rate after adrenalectomy. This may be well known, and if so would not be important *per se*, but it is important to examine data when possible to see that they agree with " known " results, for if they fail to do so it may be doubted whether other results derived from the same data are to be taken at their face values. In particular, it is curious that Cramer and Horning imply that the interaction of oestrinization with sex was no important part of their investigation or conclusions. It can hardly be doubted that they would have found it of some interest if oestrinization had affected mortality differently in the two sexes, and if so it is interesting that no such effect was observed.—I am, etc.,

Galton Laboratory, University College, London, Aug. 2. HORACE W. NORTON.

Dentures after Extraction

SIR,—The letter from Mr. J. H. Badcock in the *Journal* of August 12 (p. 368) reminds me of a case treated many years ago. It was necessary to remove teeth, including incisors, for a patient proceeding the following week to India. A denture was made before the extractions were undertaken and inserted immediately after. Instructions were given for this to be altered when necessary. Four years later this patient came back to London, and I was somewhat surprised to find he had continued to wear the appliance, unaltered in any way, and that it fitted remarkably well, having acted as a splint and so prevented much shrinkage. It is certainly bad practice to allow patients to remain without dentures for any length of time subsequent to extractions—immediate prosthesis is indicated. Mr. Badcock mentions the economic problem in regard to national health insurance patients, but I think this might be largely overcome if arrangements could be made whereby dentures could be suitably relined or remodelled some months later at small cost.—I am, etc.,

London, W.1, Aug. 15. W. FRANCIS MELLERSH.

Cause of Dyspnoea

SIR,—With reference to the annotation in the *Journal* of June 17 (p. 1239) entitled " Anoxia and Silicosis " and the comment on the recent work of Seevers, Enzer, and Becker, their demonstration of the fact that anoxaemia is not the cause of the dyspnoea associated with pulmonary degenerative changes is an important contribution to our knowledge. They offer the suggestion that the stimulation of the respiratory centre arises as the result of a diminished distensibility of the damaged lung tissues.

Clinical and pathological observation of gas-damaged ex-soldiers by the War Pensions Appeal Board, Auckland, New Zealand, has shown beyond question that there is

an intimate relation between the cardiac response to effort and the circulatory impediment and raised pulmonary pressure resulting from degenerative lung changes of the alveolar type. I have already described the striking acceleration of heart rate that is found to occur, as the "peaked" or right-heart type of cardiac response to effort; this phenomenon is to be attributed to the stimulating effect of the raised pressure on the cardio-accelerator reflex. The relation between raised pulmonary pressure during inspiration and cardiac acceleration is well illustrated by healthy children and adolescents. It is noticeable that this "peaked" type of cardiac response has an intimate relation to the existence of a collateral pulmonary circulation both in the alveolar areas and in the bronchial vessels arising from the intercostal supply. It is also observed that in cases of emphysematous degeneration that have arisen in infancy, the establishment of a collateral circulation results in the absence of the right-heart type of cardiac response. This fact is of some value in determining the attributability of such conditions to war service in ex-soldiers in whom the degeneration was constitutional in origin. In cases where such a pre-existing constitutional tendency has been aggravated and accelerated by chemical injury, the existence of an established collateral circulation masks the effect of the superadded impediment.

If it is necessary to suppose some such reflex stimulation of the respiratory centre as has been suggested, the Auckland experience would point to the raised pulmonary pressure as the exciting factor; in other words, both the cardiac and respiratory acceleration relate to circulatory impediment. It is apparently contended that right-heart hypertrophy and insufficiency are not a common accompaniment of pulmonary fibrosis. This opinion is not supported by post-mortem experience in Auckland in cases of chemical injury; the existence of a collateral circulation is the main factor in determining late cardiac effects. It must be admitted that congestive heart failure is not a common termination—this fact should be interpreted in the light of the predisposition to acute intercurrent infective disease and the markedly raised death rate as compared with other diseases in similar age groups.—I am, etc.,

Auckland, N.Z., July 26. W. N. ABBOTT.

Pasteurization of Milk

SIR,—The question of sterilization of milk was ill-considered and misdirected at the Annual Representative Meeting at Aberdeen (*Supplement*, July 29, p. 87). First of all there is no such thing as "effective pasteurization." Milk is either pasteurized or it is not pasteurized. It is amazing to me that the Chairman of the Public Health Committee and the Minister of Health, both of whom are doctors, should countenance the process adopted by milk combines and styled "pasteurized milk." Pasteur must turn in his grave when he sees his illustrious name tacked on to this process. It is a snare and a delusion, for at the end the milk may be free from tubercle bacilli but still contains many spore-forming organisms.

Pasteurization, in effect, means that Monday's milk is delivered on Thursday, and so on. The milk is allowed to cool and for three consecutive days it is raised to 80° Centigrade and kept at this temperature for one hour, and for the rest of the time it is stored on ice. The natural ferments of the milk are undisturbed by this method and all the spore-forming organisms, including the tubercle bacillus, are destroyed.

How many milk producers carry out this process? I may safely say none. The handling of milk in this country is nothing short of scandalous. Milk is, pre-eminently, *the* carrier of disease, and milk enters into the dietary of 99 per cent. of the population in one form or another. It is slopped about all over the country from can to can—vessels which are cleansed with boiling water which deposits inside them an invisible film of albumin, rich pabulum for germs to grow upon. Bottled milk is not above suspicion. With my own eyes I have seen milk bottled in the street, the milkman producing cardboard caps from his dirty pocket and sticking them on the bottles.

Milk bottles, too, are used by the populace for all sorts of purposes, even as urinals, before being returned to the milk producers to be "scalded," filled with milk, and returned to the consumers. I have seen, also, milk cans washed in a shallow pond depending for its supply on surface drainage from regularly manured fields.

The whole question is so serious that public opinion should be stirred to bring pressure to bear upon our Ministry of Health to go into the position much more thoroughly. If milk is to be pasteurized, then the Government must step in and take complete control. All over the country depots must be formed where every milk producer, large or small, must take his milk to be treated, receiving a similar amount of pasteurized milk daily for distribution. I am afraid the millennium will have arrived before this takes place, but surely, if we are honestly out to make our nation an A1 nation, then the enormous cost will be worth while.—I am, etc.,

London, W.9, Aug. 14. D. C. MACDONALD.

Nicotinic Acid in Treatment of Delirium Tremens

SIR,—I have read with great interest the account by Drs. F. Mainzer and M. Krause of the treatment of delirium tremens by nicotinic acid (*Journal*, August 12, p. 331). Any new agent in the treatment of this condition will be a valuable acquisition if its effectiveness is confirmed, as at the present time morphine in large and repeated doses is the only drug of any avail, and that often fails.

What struck me in reading Drs. Mainzer and Krause's article was that the nicotinic acid was given on the sixth day of the attack, and that point makes me fear that the dramatic improvement may not have had any relation to the treatment, but may have been due solely to the time factor, because most cases of delirium tremens clear up in five days, the restlessness giving way to prolonged sleep lasting for fifteen to twenty hours, and the patient waking up refreshed and hungry. However, I shall make a point of giving my next case nicotinic acid on the first day of the attack, and in due course will report on the effect observed.—I am, etc.,

CHARLES MILLS,
Medical Superintendent, Rendlesham Hall.

Woodbridge, Suffolk, Aug. 8.

"Contact" X-Ray Therapy

SIR,—A good deal of misconception appears to exist amongst the profession at large as to the real nature of the so-called "contact" *x*-ray therapy. This method has been misrepresented in the lay press and extravagant claims have been made for it in the circulars issued by manufacturers of apparatus. Briefly, "contact" *x*-ray therapy is a convenient but comparatively inefficient way of treating superficial and accessible malignant disease. Convenient, because owing to the relatively low kilovoltage employed the tube is small and compact and can be brought very close to the surface to be treated, or introduced during operative exposure. It can be accurately applied and the dosage rate is high, which means short

exposure time. Inefficient, in comparison with the older method of superficial *x*-ray therapy (80 to 100 kV; 10-inch distance; 0.5 to 1 mm. aluminium filter), in that the percentage depth dose is not so good and the dose at the edge of any but the smallest field is vastly inferior.

In the treatment of superficial malignancy 80 to 100 kV *x*-ray therapy has been used with complete success for very many years, and the cosmetic results are excellent. Failure is due to imperfect localization of the beam, or, more commonly, to under-dosage. Moreover, such apparatus is available almost everywhere. Why, then, this loud cry for universal adoption of "contact" therapy until the method has been perfected? When the manufacturers and physicists give us apparatus with a "differential" filter or some other means which will provide for homogeneous dosage over the whole field, treatment of surface cancer by this method will truly be the treatment of choice.—I am, etc.,

Hull, Aug. 17. R. HERMON.

Lipo-peptone in Asthma

SIR,—Protein exists in two forms: pure protein, and protein united with lipins (lipoids) or carbohydrates (polysaccharids), haptens, as Landsteiner called them (from ἅπτειν to bind). These haptens, says Professor O. Thomsen,[1] can fix antibodies *in vitro*, but are unable to produce them on injection, unless combined with proteins, when antibodies for each can be demonstrated. Landsteiner and Simms[2] showed that if lipin is injected into the vein of one ear of a rabbit, and the foreign protein (hog serum) into the other at the same time, no effect is produced, but when simply *mixed* an efficient heterogenetic antigen is constituted. The heterogenetic antigens of Forssmann are of this type, and are widely distributed in the animal kingdom. (Forssmann found that when a watery emulsion—lipoid—from guinea-pig organs is introduced parenterally into rabbits, a highly effective haemolysin is produced for sheep corpuscles.) Presumably, says Wells,[3] this union which activates the hapten so readily is physical. Commercial lecithin must be used, as shown by Sachs, Klopstock, and Weil[4]; purified lecithin being inactive.

Haptens are capable also of a special kind of antigenic function. The capsule of the pneumococcus has a structure composed of carbohydrates, the variation of which is found in Types I, II, and III. Schiemann and Casper[5] immunized mice to the pneumococcus by the injection of this pure carbohydrate. Tubercle bacilli, as shown by Laidlaw and Dudley,[6] also yield an immunologically specific carbohydrate, and in the Wassermann reaction lipins can be substituted for true antigens. All the cells of the body contain lipin (and cholesterol) with which proteins are combined probably by an ester union between protein and phosphoric acid to make lecithoprotein.

It was found by Fleischmann[7] that ox serum, digested with trypsin or pepsin until no biuret action took place, will react with the serum of man and different animals. The reaction, therefore, of peptones is much wider than that of proteins. The reagins of allergic subjects, according to Coca, are only found in man. They are immune bodies, not sharing complement fixation and are inactive with uterine muscle; they react with peptone. In view of the heterogenetic antigens provided when lipins combine with protein, the question arises whether this transformation occurs when combined with peptone.

The lipins appear to unite with the primary proteose. Two c.cm. of a 2 per cent. colloidal solution of lecithin, together with 0.12 gramme of powdered cholesterol, are agitated with 28 c.cm. of 5 or 7.5 per cent. of the clear aqueous solution of Witte's peptone 30. Adding a little chloroform, this stands for twenty-four hours, when it has a cloudy appearance from lecithin which is permanent. There is a slight deposit, stated by Maclean[8] to be mainly an adsorption compound of part of the proteose. A reaction obviously occurs, as when tested the peptone solution reveals little diminution in primary proteose; when no primary proteose is originally present the solution above the precipitate becomes quite clear after a time.

This lipo-peptone injected intramuscularly gives very good results when the asthma is not removed by getting rid of some of the foods or sources of inhalants.—I am, etc.,

London, W.1, August 15. A. G. AULD.

Abdominal Rigidity

SIR,—It has been denied that abdominal rigidity exists without there being some acute inflammatory change within—for example, an inflamed appendix, gastric ulcer, cholecystitis, or abdominal new growth or mechanical hold-up or twist, vascular or otherwise. Some surgeons, even Professor Grey Turner, deny the existence of gastric influenza, alleging that biliary disorder is present to account for the symptoms. That this is incorrect can be vouched for by the incidence and rapid response to treatment during the seasonal epidemics so commonly experienced in general practice. It is important not to miss acute appendicitis calling for early operation, and where abdominal rigidity exists there is real temptation to regard the case as one of appendicitis; but to remove an appendix from a patient with gastric influenza might easily result in disaster. To find a patient of 15 suffering from sea-sickness with a rigid tender abdomen with great pain and vomiting is also a source of anxiety. How is one to make a diagnosis?

First, one must be quite sure that rigidity of the abdomen does occur in both gastric influenza and sea-sickness. Fifteen years of practice and personal experience of both conditions convince me that it does occur, and a careful estimate of the number of cases seen in both conditions runs into hundreds. Four voyages as surgeon, two in liners, have formed the basis of my observations on sea-sickness. Symptoms dating from embarkation, and anorexia, are of real diagnostic value. When appendicitis occurs during epidemics of gastric influenza or rough weather at sea the following points are of help in differentiation. The patient usually looks more acutely ill than the other patients in the epidemic or the other sea-sick patients. To rule out appendicitis the temperature, pulse, rigidity, and symptoms *must abate within a period wholly incompatible with a diagnosis of appendicitis*—that is, a few hours to half a day. Rectal examination may give signs of appendix abscess. In gastric influenza bed, bland diet, bismuth and aspirin and quinine will produce the change in symptoms and condition. Warmth, bed, hot bottle, atropine 1/100 grain by mouth, thrice daily, and a saline and glucose enema will produce a

[1] Thomsen, O. (1931). *Antibodies in the Light of Recent Investigations*, p. 14.
[2] Wells, H. G. (1929). *The Chemical Aspects of Immunity*, pp. 62, 63.
[3] Ibid.
[4] Sachs, Klopstock, and Weil (1925). *Dtsch. med. Wschr.*, **51**, 590.
[5] Schiemann and Casper (1928). *Z. Hyg.*, **108**, 220.
[6] Laidlaw and Dudley (1925). *Brit. J. exp. Path.*, **6**, 197.
[7] Thomsen, O. Loc. cit., p. 52.
[8] Maclean, H. and I. S. (1927). *Lecithin and Allied Substances*, p. 34.

dramatic improvement, often in half an hour to two hours, if the case is one of *mal de mer*. Should rigidity persist and there be no headache with the onset (this last has invariably been present in the less serious medical states) then one must concentrate on the treatment for appendicitis. Even if the abdomen is soft, temperature and pulse normal, and tenderness and pain are present this diagnosis is probable—especially in children, where delay is fatal.—I am, etc.,

Hove, Aug. 20. J. HARTSILVER.

Bee-sting Anaphylaxis

SIR,—The following account of a personal experience of bee-sting anaphylaxis may be of interest:

In May, 1937, I was given a series of pneumococcal immunogen injections for post-operative pneumonia. Six weeks afterwards, when going through a hive, I received about six stings simultaneously. Almost at once I experienced violent tingling all over; marked constriction across the chest; dyspnoea, swelling of lips and tongue, and a tightening of neck muscles; intense palpitations and a profuse generalized erythematous and urticarial rash. I felt decidedly ill.

Previously when stung I have had a moderate local reaction, and since that unpleasant attack have had one or two isolated stings without marked effect.

Might it not be possible that owing to the recent injections I had become sensitive to foreign proteins, even if not specific. This possibility might account for the peculiar fact that hardened apiarists sometimes become suddenly sensitized to bee-stings.—I am, etc.,

Exeter, Aug. 16. R. K. FOULKES.

Sodium Sulphate for Infected Wounds

SIR,—After reading a communication about sodium sulphate in the *British Medical Journal* some years ago, I began using it here, where we often see septic wounds already several days old and where the "first-aid dressing" has frequently had a basis of cow-dung. I should like to endorse what Dr. J. C. Lyth has said in its praise in your issue of July 8 (p. 89); with growing experience I use other dressings less and less in the presence of severe sepsis.—I am, etc.,

Kamdara, Bihar, Aug 8. N. P. BRUCE.

Universities and Colleges

UNIVERSITY OF LONDON

The Senate has appointed Viscount Dawson of Penn a member of the Court in the place of Professor F. Horton, F.R.S., for the period of Professor Horton's term as Vice-Chancellor. Lord Dawson has resigned his membership of the Senate as a representative of the Faculty of Medicine in view of his appointment by the Senate as a co-opted member.

Dr. A. E. Clark-Kennedy has been appointed a Governor of Queen Mary College.

Recognition of Teachers

The following have been recognized as teachers of the University in the subjects indicated in parentheses: *St. George's Hospital Medical School:* Dr. Desmond Curran (Mental Diseases); Dr. C. M. Gwillim (Obstetrics); Dr. C. K. Pinckney (Diseases of Children); Dr. K. Robson (Medicine). *St. Mary's Hospital Medical School:* Dr. I. H. Maclean (Bacteriology); Dr. D. M. Pryce (Pathology). *Westminster Hospital Medical School:* Dr. H. J. Ewen (Psychological Medicine). *King's College Hospital Medical School:* Dr. T. K. Lyle (Ophthalmology). *London School of Hygiene and Tropical Medicine:* Dr. J. C. Cruickshank (Bacteriology).

Diplomas in Clinical Pathology

The regulations for the Academic Postgraduate Diploma in Clinical Pathology have been amended for examinations in and after 1940.

Biology at First M.B. Examination

The syllabus in general biology at the first examination for medical degrees for external students (*Blue Book*, September, 1938, p. 816) has been amended by the deletion of the first paragraph under the heading "General Biology" and by the substitution therefor of the following:

> The whole subject is to be treated in an elementary manner, with particular regard to the inculcation of general biological principles and to the subsequent work of the student. It should be noted that an equal amount of time is given to the written and practical examinations, and that equal importance is attached to the candidate's performance in each.

King's College

The following appointments have been made at King's College:

Lecturers in Physiology: E. F. McCarthy, M.B., B.Ch., and D. B. Taylor, M.B., B.Ch. *Demonstrator in Anatomy:* J. P. Bentley, M.B., B.S. *Demonstrator in Physiology:* D. J. N. Smith, M.B., B.S. *Medical Officer to King's College Theological Hall:* G. Hale, M.B., B.Chir.

The honorary secretary of the Lausanne Medical Graduates' Association informs us that the following medical practitioners have recently been approved for the M.D. degree at the University of Lausanne: G. R. M. Apsey, A. J. C. Eland, R. Robins-Brame, and D. K. Sundaresan.

The Services

DIRECTOR-GENERAL R.A.F.M.S.

The Air Ministry announces that the status of the Director of Royal Air Force Medical Services has been advanced to that of Director-General with the rank of Air Marshal. Air Vice-Marshal Sir Victor Richardson, K.B.E., C.B., D.P.H., K.H.S., Director of R.A.F. Medical Services, has become Director-General and has been promoted to the rank of Air Marshal, with effect from August 1.

DIRECTOR AND PROFESSOR OF PATHOLOGY, R.A.M. COLLEGE

Lieutenant-Colonel and Brevet Colonel L. T. Poole, D.S.O., *M.C.*, K.H.P., late R.A.M.C., has been selected for promotion to colonel and to succeed Major-General H. M. J. Perry, C.B., O.B.E., K.H.S., as Director and Professor of Pathology at the Royal Army Medical College, Millbank, S.W., on the retirement of the latter from September 26.

HONORARY PHYSICIAN TO THE KING

Surgeon Rear-Admiral Thomas Creaser, R.N., has been appointed Honorary Physician to the King.

DEATHS IN THE SERVICES

Lieutenant-Colonel CHRISTOPHER BIRDWOOD MCCONAGHY, I.M.S. (ret.), died at Camberley on August 9, aged 62. He was born on March 25, 1877, the son of the late Surgeon-General W. McConaghy, Bombay Medical Service, and was educated at Edinburgh University, where he took the degrees of M.B., Ch.B., in 1900. Entering the Indian Medical Service as lieutenant on June 27, 1901, he became lieutenant-colonel on December 27, 1920, and retired on May 24, 1930. After three years' military service he entered the medical branch of the political department and served successively as residency surgeon at Baghdad, June, 1904, Bushire and the Persian Gulf, November, 1909, and Bhopal, September, 1914. From May, 1916, to May, 1918, he was on military duty serving in Iraq, and received the medals for the war of 1914-18. In June, 1918, he returned to the political department, and served as residency surgeon in the Eastern Rajputana States, June, 1918, Bhopal, January, 1919, and legation surgeon in Nepal from March, 1926, until his retirement. He had been a member of the British Medical Association for seventeen years.

Obituary

LEONARD WILLIAMS, M.D.

Formerly Physician to the Metropolitan Hospital, the Miller General Hospital, and the French Hospital

We regret to announce the death in London on August 20 of Dr. Leonard Williams, who was for many years a well-known figure in the medical world of London, and whose writings and speeches brought him before a wider audience, both medical and lay.

The youngest son of the late David Williams, M.P., of Deudraeth Castle, Merionethshire, Leonard Llewelyn Bulkeley Williams was born on October 2, 1861, and from Marlborough College went to study medicine at the University of Glasgow, graduating M.B. and C.M. in 1886, and proceeding to the M.D. in 1899. After some years in general practice at Sidmouth, where he was honorary medical officer to the cottage hospital, he came to London, took the M.R.C.P., and soon won success as a general physician. He was elected to the visiting medical staff of the Metropolitan Hospital, the Miller General Hospital, Greenwich, and later to the French Hospital and the German Hospital in London. With a flair for dietetics and the management of metabolic diseases Leonard Williams acquired first-hand knowledge of many of the Continental and British spas. He had been President of the Balneological and Climatological Section of the Royal Society of Medicine, and was elected a corresponding member of the American Climatological Society and the Société d'Hydrologie de Paris; he was also for some time editor of the *Journal of Balneology and Climatology*, and for three years of the *Medical Press and Circular*. His book *Minor Maladies and their Treatment*, first published in 1906, has passed through seven editions. Other products of his free-running and pungent pen were *Science and Art of Living*, 1924; *Middle Age and Old Age*, 1925; *Obesity*, 1926; and a pamphlet, *Growing Old Gracefully*.

Nothing if not dogmatic, Leonard Williams waged warfare against over-eating (especially the abuse of butcher's meat), over-drinking, over-clothing, tight neck-wear, high heels, central heating, tobacco, cane sugar, and the cult of athleticism in girls' schools. He followed Sir Arbuthnot Lane in attributing a great deal of ill-health to constipation and "intestinal toxaemia." He was an early advocate of a diet of raw fruit and vegetables, with periodic fasting. As an after-dinner speaker he was in much demand, and his alliterative phrases gave "good copy" to reporters. He lived up to his own tenets and remained a spare figure to the end of his days.

Dr. C. O. Hawthorne writes:

Leonard Llewelyn Bulkeley Williams was recognized both by his friends and his critics as a writer who, having something to say, cultivated his own fashion of saying it. A habit of vigorous and often of challenging independence ruled both his opinions and his actions. In not a few directions this quality made him both effective and welcome. On the other hand, it did not make either for balance or for reserve in his not infrequent controversial activities, and it must perhaps be allowed that while he brought vivacity and entertainment to the fray, he was concerned rather with victory than with values. Even his opponents will remember him as skilled in fence and, while having some delight in mischief, he knew neither malice nor ill will. Williams had the benefit of early educational and social advantages at Marlborough and afterwards in France and in Germany; he graduated in Medicine in Glasgow in 1886. He applied these opportunities to good purpose, for, alike in speech and with pen, he could use effectively his mother tongue, and French and German were each to him an open book. In most of his many writings the appeal had a semi-popular rather than a scientific quality, and he cultivated with much freedom the absolute proposition and the dogmatic and daring phrase. For several years he contributed weekly an article of general comment on matters medical to the *Medical Press and Circular*, and "Sinapis" was the term he significantly chose as a signature. His volume named *Minor Maladies* had the warrant of several editions and of translations into two foreign languages, and both here and elsewhere his fluent and confident style had many admirers and not a few disciples. In his personal and social relations Leonard Williams made many devoted friendships. If his disposition was combative and assertive, he was none the less generous and responsive to affection, while his alertness, gaiety of spirit, and love of good talk made him a very entertaining companion. It is these qualities which remain as memories for those of us who knew him well.

PROFESSOR ARCHIBALD YOUNG

Professor Grey Turner writes:

The late Professor Archibald Young will be much missed in many spheres of activity and certainly not least at the annual meetings of the Association of Surgeons of Great Britain and Ireland, the triennial congresses of the International Society of Surgery, and the October sessions of the French Society of Surgery. His well-known figure clad in the inevitable grey suit with the morning tails was almost a landmark, while his leonine head and deep-set eyes and his delightful Northern accent proclaimed him anywhere. It is indeed sad to think that he will no more enliven our meetings.

He thoroughly enjoyed the International Congresses and had many friends among the members. All were familiar with his facility for debate and his penchant for expressing his views on the conduct of meetings, the interpretation of rules, and on procedure: but it was not given to everyone to know his real kindness of heart and to appreciate that warm generous nature that was so often disguised by a bristling sensibility. He was most hospitable and loved opportunities for entertaining his friends, whether colleagues or the many foreign surgeons whose friendship he cherished. Young was a noted letter writer, and how he managed to find the time to dictate and often to write with his own hand such long and detailed communications remains a marvel. But those who came in close contact soon realized the force of his personality, his tremendous capacity for work, and his industry.

He took his university duties most seriously. The regius professorship of surgery in Glasgow was endowed with great traditions, and it was Young's constant thought and endeavour to maintain and enhance them. Though he may have been too individualistic and just a little dictatorial, there can be no doubt about his desire to do his duty in his high office. Academic status and university ritual, he always maintained, should be upheld. But as a practical surgeon he did notable work and made many contributions to the art, and in many directions. His work on fractures and on the surgery of the sympathetic system is best known, but there were few fields in which he had not been active and to good purpose. For years

Young had been dogged by ill-health and suffered much pain and physical distress, which he endured with stoical courage. Early this year his health was unusually precarious, then came a turn for the better with brighter hopes for the future. On April 5 he was able to be present at the Lister Memorial Lecture at the Royal College of Surgeons of England and to take part in two social functions arranged to do honour to the lecturer. It gave Young unbounded pleasure to be present and to share in the warm recognition of his great friend René Leriche.

On June 20 of this year it was my privilege to deliver the Macewen Memorial Lecture in Glasgow. Young was a very generous host on that occasion, and he it was who proposed a vote of thanks. The principal, Sir Hector Hetherington, who presided, had referred to the impending retirement of the Regius Professor, and in his reply Young spoke as though the occasion was to be his last public appearance, but little did we think that his remarks displayed an intuition and that his career was so rapidly drawing to its close. In his activities he was unobtrusively supported by his devoted wife, and much sympathy will be felt for her in her sad loss.

Mr. FRANK ROMER, who died on August 7 at the age of 68 after a long illness, was well known in the racing world, having been consulting surgeon to the Jockey Club and the National Hunt. He was the youngest son of the late Sir Robert Romer, a former Lord Justice of Appeal, and his early education was received at Sherborne School, from which he entered St. George's Hospital. He qualified M.R.C.S., L.R.C.P. in 1894, and devoted his professional activities mainly to injuries and diseases of the bones and joints. He took a keen and critical interest in "bone-setting," on which he was the joint author of an article in the *British Medical Journal* in 1911, and wrote a book about it four years later. He had been assistant medical registrar to St. George's Hospital and was a member of the Harveian Society. In the war he held the commission of lieutenant-colonel in the R.A.M.C., and was placed in charge of the mechano-therapeutic departments at various military hospitals. He had also held the appointments of honorary surgeon to the Royal Academy of Music and consultant surgeon to the London Guarantee and Accident Company, and was an Officer of the Order of St. John of Jerusalem. An injury to his leg during the war caused him much pain and disablement during the rest of his life, and eventually led to amputation. Beyond his medical writings Frank Romer was the author of several racing novels, and he was for some years honorary secretary of the Medical Golfing Society.

Dr. GEORGE FILMER GRANT, who recently retired from practising in Brixton, died early in August while on holiday in Worthing. He received his medical education in Edinburgh, where he graduated M.B., C.M. in 1886. Before settling in Brixton thirty-six years ago he had worked in India, where he was surgeon to the Chumparan Planters Association. Dr. Grant was a Fellow of the Zoological Society, the London Dermatological Society, and the Royal Society of Medicine. He was the author of a book on gavials and alligators. He had been a member of the British Medical Association for thirty-one years.

Dr. HUGH WATSON FOX, J.P., died at Torquay on August 12 at the age of 65. Born in Woodford in April, 1874, the son of the late William R. Fox, he was educated at Forest School, Walthamstow, and Guy's Hospital. He received the diplomas M.R.C.S., L.R.C.P. in 1900. During the war he held the commission of Captain R.A.M.C. For many years he was in general practice at Bettws-y-Coed, North Wales, and medical officer to the Post Office. He took much interest in social affairs generally, and was a Justice of the Peace for the County of Carnarvon. He joined the British Medical Association in 1902, and was chairman of the North Carnarvonshire and Anglesey Division in 1924–5. He remained a member for thirty-six years, but the later years of his life were clouded by ill-health, and he removed to Port Isaac in North Cornwall.

We regret to announce the death, at the age of 77, at his home at St. Anne's on the Sea, of Dr. JOHN BLAIR, J.P., honorary consulting surgeon to the Wigan Infirmary and the St. Anne's War Memorial Hospital. A student of Queen's College, Cork, he graduated M.D. and M.Ch. of the Royal University of Ireland in 1881, and took the M.A.O. in 1886. Before settling in practice at Wigan in 1905 he had been a member of the staff of the Cork Fever Hospital and the Cork Maternity Hospital, and physician to the City of Glasgow Fever Hospital. Dr. John Blair joined the British Medical Association in 1882, and while in practice at Wigan held office as chairman of the local Division and represented it at the Annual Representative Meetings of 1907 and 1908. At St. Anne's he was medical officer to the Abraham Ormerod Home and a member of the governing body of the War Memorial Hospital. He was placed on the Commission of the Peace of the borough of Wigan, and later was made a county magistrate. His wife died four years ago, and he leaves five sons, two of whom are members of the medical profession. Many patients and colleagues attended the funeral service, on August 10, at St. Thomas's Church, testifying to the great esteem in which he was held in the neighbourhood.

Dr. GEORGE HENRY PERCIVAL, O.B.E., consulting surgeon to the Northampton General Hospital and formerly local surgeon to the L.M. and S. Railway, died at his home in Kingsley Road, Northampton, on August 20, aged 91. A student of Guy's Hospital, he qualified M.R.C.S. and L.S.A. in 1871, and took the M.B.Lond. degree in 1874. Before settling in practice at his birthplace, he served as resident medical officer to the Stanhope Street Dispensary, in London, and assistant medical officer to the Salop and Montgomery County Asylums, and the Homerton Fever Hospital. He combined the work of a general practitioner with a good deal of operative surgery, and in the 'eighties published surgical papers in the *British Medical Journal*. During the war he served as visiting surgeon to the Duston War Hospital. Dr. Percival joined the British Medical Association in 1877 and continued a member until his retirement from active practice. His son, Dr. H. F. Percival, worked with him in partnership at Northampton.

The death of Dr. ALEXANDER DONALDSON at the age of 46 after a long-standing illness has brought sorrow to the inhabitants of Egremont and Cleaton Moor, where he had practised for the past eleven years. Born at Portsoy, Banffshire, he received his medical education at the University of Aberdeen, where he graduated M.B., Ch.B. in 1924, after which he settled down in Cumberland. Dr. Donaldson was a member of the Cumberland Division of the British Medical Association. He underwent a serious operation four years ago, and another last April, and died at Portsoy.

Many friends of the late Dr. Jane Walker are desirous of putting up a memorial to her at the East Anglian Sanatorium, which was the centre of her life, and to which she gave so many years of inspiring work and thought. It is suggested that this should take the form of a bronze portrait to be placed in the chapel, and an organ for this chapel which she so loved, to commemorate her great joy in music and singing. Those who would like to join in the project may send their gifts to Dr. Eleanor Soltau, East Anglian Sanatorium, Nayland, near Colchester.

Medical News

The annual dinner and week-end conference of surgeons of the St. John Ambulance Brigade will be held at the Hotel Great Central, Marylebone, on Saturday and Sunday, October 14 and 15.

The sixth Congress of French-speaking Dermatologists and Syphiligraphists will be held in Paris at the Hôpital Saint-Louis from October 12 to 14 under the presidency of Dr. G. Milian. The subjects for discussion are: histamine in dermatology, balanoposthitis, and agranulocytosis in dermato-venereology. Further information can be obtained from Dr. Georges Basch, 167, Boulevard Malesherbes, Paris, 17e.

The twenty-eighth Italian Congress for the Advancement of Science (S.I.P.S.) will be held from October 8 to 15 at Pisa. Further information can be obtained from S.I.P.S., Piazzale delle Scienze 7, Rome.

The twenty-sixth French Congress of Hygiene will be held at the Institut Pasteur, Paris, from October 9 to 12. Further information can be obtained from the general secretary, Dr. X. Leclainche, 18, Rue de Tilsitt, Paris, 17e.

The tenth Congress of the German Society of Urology will be held in Vienna from October 12 to 14 under the presidency of Professor Hans Rubritius.

It is announced in the *Times* that an underground operating theatre, for use in war time, is being built into the foundations of a new block of buildings now under construction at the Hospital for Sick Children, Great Ormond Street, London. The underground accommodation will consist of a receiving room with eighty seats and six dressing rooms, where minor injuries can be dressed; an operating theatre for major casualties, with three tables and nine dressing and anaesthetic cubicles; a duty-room for the staff; and a sterilizing room. Electric light and water supplies are from sources independent of the main services.

The Vienna Academy for Postgraduate Instruction has arranged for a course to be held on September 29 and 30 at Bad Gleichenberg, Steiermark, on asthma and allergic diseases. A full programme can be obtained from the secretary of the Academy, Alserstrasse 4, Wien IX.

The course on orthopaedics which was to have been held by the Berlin Academy for Postgraduate Instruction from September 11 to 16 has been postponed to the spring of 1940.

The annual meeting of the French League against Rheumatism will be held at the Alfort Veterinary School on October 7, when the following subjects will be discussed: (1) diseases of the skeleton in the horse; (2) osteo-articular affections of animals in relation to feeding; (3) the role of infection in osteo-articular diseases of animals. Further information can be had from Secrétariat de la Ligue Française contru Rhumatisme, 23, Rue du Cherche-Midi, Paris.

The next annual meeting of the International Society of Medical Hydrology, which is open to non-members on payment of a fee of £1, is to be held in Italy, at Florence and the neighbouring spas, from October 14 to 19. The members of the congress will be housed in Montecatini for the first four days, and in Salsomaggiore for the fifth, but the ceremonial opening meeting and first discussion will be held at Florence. A visit will be paid to Viareggio and neighbouring seaside resorts. After the meeting there will be optional excursions to Genoa–Acqui–Turin, Abano–Padua–Venice, Siena–Chianciano–Rome; inclusive charge per head, 450 Italian lire. Subjects for discussion will be: (*a*) Physico-chemical studies of the perspiration occurring after treatment by peloids. (*b*) Spa treatment of diabetes. (*c*) The action of solar rays on the skin of children. Papers may be read in English, French, German, or Italian, and translations will be provided. A conducted party will be arranged to travel from London. All information can be had from the I.S.M.H., 22, Bedford Place, London, W.C.1.

The fourteenth session of the International Association for the Protection of Childhood will be held in Rome from October 9 to 14. The following subjects are down for discussion: anti-tuberculous prophylaxis in predisposed children, the legal and administrative protection of minors in moral danger, and the professional orientation of minors in relation to the general economy of the country. Further information can be obtained from the Secrétariat Générale, 67, Avenue de la Toison d'Or, Brussels.

Dr. E. Lewys-Lloyd has been appointed Commissioner of the Merioneth centre of the Order of St. John of Jerusalem, under the Priory for Wales, in succession to Sir Charles Phibbs, who has resigned.

Dr. Hans Killian, professor of surgery and orthopaedics at Freiburg i.B. has been awarded the St. Sava Order of the third class at the request of the Queen of Jugoslavia.

During the last three years the following number of cases of poliomyelitis have been reported in Italy: 2,360 in 1936, 2,740 in 1937, and 1,889 in 1938. In 1939, 1,094 cases had been reported up to June.

During 1938, 612,000 births were registered in France, as compared with 1,031,000 in Italy and 1,675,000 in Germany.

According to statistics for the last fifty years, the mortality in Germany from tuberculosis per 10,000 has fallen from 28.4 to 6.4 for women, and from 34.2 to 7.8 for men.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

With the exception of enteric fever all the principal notifiable diseases in England and Wales showed a decrease for the week. The decrease affected chiefly scarlet fever, 1,320 (1,508), which is just over the median value for the last nine years; decreases were also reported from Scotland, Eire, and Northern Ireland. Small decreases in respect of diphtheria were also recorded for all four countries, and the figures for England and Wales and for London are well below the median value for the last nine years. Small decreases were recorded in the notifications of measles and whooping-cough in London and Scotland.

Acute poliomyelitis (including polio-encephalitis) fell from 20 to 18 in England and Wales and from 6 to 4 in London. During the week notifications were received from eight counties: Lancashire 4 (Burnley C.B. 1, Manchester 2, Haydock U.D. 1), London 4 (Battersea 1, Deptford 1, Southwark 1, Stepney 1), Kent 3 (Maidstone 2, Malling 1), Southampton 2 (Alton R.D. 1, New Forest R.D. 1), Yorks West Riding 2 (Bingley 1, Rotherham 1), Bedford 1 (Kempston), Durham 1 (West Hartlepool C.B.), Nottingham 1 (Worksop U.D.). Notifications of dysentery fell from 41 to 37 in England and Wales. Counties chiefly affected were: London 8 (Bermondsey 1, Camberwell 1, St. Pancras 1, Shoreditch 5), Yorks West Riding 6 (Bradford 4, Sheffield 2), Essex 7 (Colchester), Kent 3 (Bridge-Blean), Lancashire 3 (Manchester 1, Wardle U.D. 1, Preston R.D. 1), Northumberland 3 (Newcastle-upon-Tyne), Surrey 3 (Croydon 2, Woking 1), Derby 1 (Shardlow), Gloucester 1 (Sodbury), East Sussex 1 (Battle), Warwick 1 (Birmingham).

Cholera in Asia

The usual seasonal prevalence of cholera occurred during the four weeks ended August 12 in various provinces in India, notably Bombay, United Provinces, and Bengal. In Bengal the number of cases has been between 700 and 800 each week, while in the United Provinces between 300 and 600 cases are reported each week. In Madras Presidency the incidence is low, well below 100 a week; this is lower than any year since 1933. In recent years usually several hundreds or even thousands of cases have been recorded weekly at this season. In China at Hong Kong the disease had been on the decline during the three weeks ended August 5, but cases rose in the following week to 75 with 54 deaths. At Shanghai there have only been 2 cases, neither of which was fatal; the last case occurred at the end of December, 1938

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INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended August 12, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

Figures of Births and Deaths and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)					1930–8 (Median Value Corresponding Weeks)	
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)	(a)	(b)
Cerebrospinal fever	21	1	3		1	14	3	12	1	—		
Deaths		—	—				1	1				
Diphtheria	720	77	176	23	18	892	115	113	43	13	811	115
Deaths	14	4	2	1	1	21	1	2	2	—		
Dysentery	37	8	21		—	21	7	36		—		
Deaths				—	—				—	—		
Encephalitis lethargica, acute	3	—	—		—	3	—	1		—		
Deaths		—					1					
Enteric (typhoid and paratyphoid) fever	32	1	9	4	1	24	1	17	4	2	56	
Deaths	—	—	1	—	—	—	—	—	—	—		
Erysipelas			42	7	3			53	5	2		
Deaths		—					—					
Infective enteritis or diarrhoea under 2 years												
Deaths	27	5	7	9	3	59	18	13	6	4		
Measles		20	44		1			49		2		
Deaths	3	—	—	1	—	1	—	1	2	—		
Ophthalmia neonatorum	88	10	21		—	95	12	14		—		
Deaths												
Pneumonia, influenzal*	317	17	2		5	429	33	—		2	429	34
Deaths (from influenza)	8	1	—	—	—	12	3	2	—	1		
Pneumonia, primary			99	6				5	9			
Deaths		9		6	4		7		14	2		
Polio-encephalitis, acute	3	—				6	—					
Deaths		—					—					
Poliomyelitis, acute	15	4	1		2	81	3	15	3	—		
Deaths		—					—					
Puerperal fever	6	6	14	1	—	3	3	8	4	—		
Deaths		2†					—					
Puerperal pyrexia	169	18	12		—	192	19	14		11		
Deaths												
Relapsing fever	—	—			—	1	—			—		
Deaths												
Scarlet fever	1,320	108	202	32	55	1,129	107	253	50	60	1,314	217
Deaths	3	—	—	—	1	—	—	1	—	—		
Small-pox	—	—	—		—	—	—	—		—		
Deaths	—	—		—	—	—	—		—	—		
Typhus fever	—	—	—	—	—	—	—	—	—	—		
Deaths				—	—				—	—		
Whooping-cough		174	39		9			52		18		
Deaths	11	3	—	2	—	1	—	5	1	1		
Deaths (0–1 year)	227	35	48	32	21	248	36	66	22	10		
Infant mortality rate (per 1,000 live births)	36	32				41	29					
Deaths (excluding still births)	3,591	667	558	164	138	3,735	687	539	148	103		
Annual death rate (per 1,000 persons living)	8.8	8.6	11.3	11.0	12.1	9.2	8.7	11.0	10.0	9.1		
Live Births	5,764	973	914	318	221	6,813	1,311	828	411	226		
Annual rate per 1,000 persons living	14.1	12.5	18.5	21.4	19.4	16.7	16.7	16.9	27.8	20.0		
Stillbirths	205	40	46			278	30					
Rate per 1,000 total births (including stillborn)	35	33				39	22					

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.
† Death from puerperal sepsis.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Psychogenic Aspect of Miners' Nystagmus

Dr. G. F. WALKER (2, Grange Crescent, Sunderland) writes: I am collecting evidence in connexion with the psychogenic aspect of miners' nystagmus, and I should be very much obliged if any of your readers could furnish me with case records or other evidence for or against the proposition that the psychogenic element in miners' nystagmus is predominant and more important than all other causes combined.

Thumb-sucking

Mr. J. H. BADCOCK, F.R.C.S., writes from Jamaica: "If "A. N. F." (April 15, p. 808) will watch the child sucking her finger he will almost certainly find that she is fumbling something soft, such as the blanket, a woolly toy, or her own hair, with the other hand. My suggested explanation of this curious phenomenon may be found in the *Transactions of the British Society for the Study of Orthodontics*. The frustration of the correlated action will sometimes be enough by itself to break the habit, though at the cost of trouble for a night or two, and if not, should accompany any further measures. A device, said to act efficiently, which could be made by any dentist, consists of two loops of silver wire joined at right angles, one to the other, and connected at their free ends by a ring, thus forming a kind of cage, or finger-stall.

LETTERS, NOTES, ETC.

Identification by Tattoo Mark for A.R.P.

Dr. A. B. STEWART writes from the Medical School, Newcastle-upon-Tyne: You have recently published letters in your correspondence columns suggesting a universal tattooing of the upper right abdominal quadrant with the individual's blood group number as a form of A.R.P. Undoubtedly this is a very valuable suggestion and merits adoption, but one important point has escaped your correspondent's notice —namely, "upper right abdominal quadrant." A stroll along any popular bathing beach will reveal countless exposed U.R.A.Q.s. Similarly a visit to a theatre in the evening will probably reveal more exposed U.R.A.Q.s belonging to the young ladies in the chorus. I am sure you will agree that very few of these people will voluntarily mutilate their U.R.A.Q.s with a tattoo mark. I propose that the group number should be tattooed on the upper portion of the right buttock. This position will be aesthetically agreeable to all except nudists.

Faked Injuries in First-aid Exercises

Mr. A. P. BERTWISTLE, F.R.C.S.Ed. (London, W.1), writes: The old-fashioned method of indicating "injuries" in first-aid exercises is dying out too slowly. What could be more unnatural than for a first-aider to find a label on the "patient" giving the diagnosis? It gives no training in examination of the patient—a most important feature. The substitution of signs and symptoms for a diagnosis is an improvement, but here again there is no examination called for. To indicate a concussion by rendering the face white with powder, with red-ink markings at the ears, nose, and mouth creates a picture which the worker can appreciate. Simple fractures can be imitated by means of broken sticks secured in position by adhesive plaster, care being taken to place plaster on the skin first to avoid an abrasion. A realistic fractured clavicle can be obtained by placing a piece of stick, directed upwards and inwards at the junction of the outer two-thirds and inner one-third of that bone. The main object of all first-aid treatment of fractures is to prevent a simple fracture becoming compound or complicated, since no one has ever died directly as the result of a simple fracture. Compound fracture can be simulated by placing a red tab on the clothing over the site and fastening with adhesive tape, and then fixing a piece of wood dipped in red ink over the position of the fracture. The red tab on the clothing is to direct attention to the site of injury; it can also be used to indicate the position of arterial or venous haemorrhage. Ingenious minds will doubtless think of many more ways of faking "injuries," but let us have "injuries" which teach rather than labels which give no opportunity for examination.

Antacid Gastric Therapy

Dr. HYMAN I. GOLDSTEIN (Camden, New Jersey, U.S.A.) writes: We have all had the experience with patients suffering from hyperacidity, gastric and duodenal ulcer, who after the free use of large doses of bicarbonate of soda and other systemic "alkalis" developed pre-clinical alkalosis. Nausea, vomiting, headaches, distaste for milk, dizziness, etc., are some of the symptoms complained of by these patients. A number of reports have appeared in the literature, demonstrating the ill effects of the free use of bicarbonate of soda in large doses over long periods of time. As the result of the studies of Greenwald (1923), Kantor (1923), Shattuck (1924), Freezer, Gibson, and Matthews (1928), Mutch (1936, 1937), Mann (1937), Eusterman (Mayo Clinic), Tidmarsh and Baxter (1938), Kraemer (1938), Goldstein (1938), and others, non-systemic alkaline therapy has been shown to be both useful and effective, and free from the danger of alkalosis. During the past year I have tried, with favourable results, a combination of magnesium trisilicate (50 per cent.), kaolin (25 per cent.), and aluminium hydroxide (25 per cent.). Good results have been obtained by administering the remedy to the point of almost complete neutralization of all "free acid" over a considerable period of time. I hope that others interested may give this combined form of therapy a fair trial.

The "Meteorological Magazine"

The *Meteorological Magazine* is published monthly at 6d. by H.M. Stationery Office under authority from the Meteorological Office. The new volume—the seventy-fourth of the series—shows several changes which should make for increased popularity. Since February it has been printed in bolder type on better paper, and the stiffer cover carries a simplified design. These outward signs reflect the change of spirit within. The new magazine appeals to all interested in natural phenomena, instead of only to professional meteorologists. A "Notes and News" column provides information upon minor events of general interest, and the columns of the magazine still remain open to amateur meteorologists who have striking or rare phenomena to report.

Disclaimer

Mr. J. BASTOW wishes to state that in the article entitled "Crippled Girl's Swimming Display" in a recent number of the *Daily Herald* the use of his name was entirely without his knowledge or consent.

Corrigendum

The first reference at the foot of the medico-legal article on the Poole Milk Appeal in last week's *Journal* (p. 427) should read "'*British Medical Journal*, 1938, **1**, 1135."